Remarks
ON
SYRINGOMYELIA (SACRO-LUMBAR TYPE), OCCURRING IN A BROTHER AND SISTER.

BY

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THE occurrence of syringomyelia in a familial form seems to be extremely rare. That anomalies of development of the spinal cord lie at the origin of syringomyelia in most cases is established by the accumulated pathological data. Moreover, other abnormalities of the antenatal development of the nervous system are not infrequently found in association with syringomyelia, such as hydromyelus, spina bifida, meningocele, doubling of the central canal, and hydrocephalus. It is not surprising, therefore, that occasionally developmental defects of this kind should occur in more than one member of the same family.

With regard to the sacro-lumbar type of the disease—an uncommon form—the one present in the cases described below, Schlesinger[1] notes that it is not to be sharply distinguished from spina bifida, that it often arises out of it, and is observed at an early age.

The only cases which at all resemble our own which we have been able to find in the literature are three reported by Bruns[2] under the title of family symmetrical gangrene and arthropathy, or familial syringomyelia. Four children out of a family of five born of healthy parents were affected in the same way. The disease began in each of them at about the age of 17, with symmetrical ulcers on the balls of both great toes, which perforated into the joint. Other ulcers formed on the feet from time to time, suppuration extended into the joints with formation of fistulae and discharge of small portions of bone. Deformities and loss of some of the toes occurred, varying in the different cases. Finally, great deformity of the feet resulted. In addition, there were present muscular atrophy, loss of the tendon (including knee-jerks), and skin reflexes, and deficiency or loss of sensation to touch, pain, and temperature. The absence of much pain was shown by the fact that in spite of the extensive disease of the feet the patient was able to walk about. The cases differ from ours in that there does not appear to have been dissociation of sensation and in the loss of the knee-jerks; in other respects, and in the absence of disturbance of the bladder or rectum, they correspond. Bruns refers to cases reported by Bramann at the Berlin Surgical Congress in 1889, of which we have only been able to obtain access to a short abstract. These were three brothers, aged 13, 11, and 7 years respectively. Their parents and sisters were healthy. The patients were badly nourished and anaemic, and suffered from symmetrical gangrene of the fingers and toes, together with ulcers of the feet. The symmetrical characters of the lesions and the sensory disturbances pointed to syringomyelia.

It is probable that a more extensive search through the literature would discover other cases of the same kind published under different titles, for it may be remarked that syringomyelia probably plays a larger part in the production of chronic joint diseases than is generally held, and that in such cases the disease of the bones and joints is so conspicuous that attention is wholly concentrated upon them, and accordingly the observer fails to look for the sensory and other manifestations of syringomyelia, which, being present in comparatively slight degree, pass unrecognized. This point is brought out by Borchard,[3] who remarks upon the want of parallelism between the grade of the joint affections and the severity of the remaining nervous symptoms.

In the second of the cases described below the nature of the disease was so unusual that when the patient appeared with a large chronic ulcer on the dorsum of her foot a family likeness was at once recognized from the breadth of the foot and the outturned great toes before it was known that the patients were brother and sister.

CASE I.

L. F., a man, aged 23, was admitted into the General Hospital, Bristol, on September 9th, 1908, for deformity of the legs.

The family history was unimportant; father, history unknown mother, healthy. In addition to the sister described below there are three sisters alive and in good health; one sister died, cause unknown.

Fig. 1. Case I.—Skiagram of right foot.

Past History.

He had always been healthy except for the affection of the feet. This dates from infancy, and he has never been able to stand upright since he can remember. He has often suffered from "sores on the feet," and it was for such a condition that he first came under care as an out-patient. He then had a large chronic ulcer over the dorsum and outer side of the right foot, several inches in diameter. How these ulcers originated he is unable to say, but he thinks they are due to the rubbing of the boot. They are always painless.

Condition on Admission.

He is a robust, broad-chested, intelligent man, with normal head, arms, and trunk. He is obliged to walk with crutches because both knees are so much bent. His natural height—which is about 5 ft.—is reduced to 4 ft. by the flexion of the knees and hips. There is marked lordosis and flexion of the hips, which are no doubt compensatory for the knee flexion. All the deep reflexes are much exaggerated, and there is marked ankle and patellar clonus on both sides. Extension plantar reflex (Babinski's sign) present on the right side. Both feet are remarkably broad and elephantine. This is partly due to the great breadth of the metatarsal arch and partly to the almost complete loss of the toes. On the left foot there is no vestige of a toe, and the heads of the metatarsal bones have also disappeared. The stump is covered by the scar tissue left after the recurrent ulceration. The right foot retains a great and second toe, both of which are shrunken and deformed, and the stumps of two other toes. He states that the toes have been lost after various attacks of ulceration.

Skiagrams of the right foot (Fig. 1) show that in the great toe the first phalanx has practically disappeared, the distal phalanx is short and broad; the second, third, and fourth toes have a proximal phalanx, that of the fourth being atrophic at the distal end; there is no other trace of any other phalanges. Of the metatarsal bones, the first is short, its distal end is

atrophied; the distal ends of all five are transparent as compared with their shafts. The tarsus is normal.

In the left foot the bones of the tarsus are remarkably transparent; their outlines are so indefinite, and the amount of destruction so great as to make it impossible to say exactly what bones remain, the condition of the whole tarsus resembling the extensive changes of an advanced Charcot's joint. The fourth and fifth metatarsal bones remain, the third is atrophic and shows a fracture; the basal stumps of the first and second are indistinctly visible, and the remnant of one phalanx only lies loosely in the soft tissues.

The hands are rather broad; no anomalies are shown by the *x* rays, except that the terminal phalanges of the thumbs are remarkably short and broad (Fig. 2).

Both knees are flexed, the right to 100 degrees, and the left to 110 degrees, and though they cannot be extended beyond this point they move freely in the direction of further flexion.

Each knee-joint contains a great excess of fluid, and the lower end of the femur is unnaturally prominent owing to the backward displacement of the tibia. The condition of the patella is very remarkable. It is distinctly double on both legs, a wide gap being palpable between the fragments. On the right side each is of about the size of a normal patella, but on the left side the upper fragment is decidedly smaller than the lower. The drawings (Fig. 3) from the skiagrams show these points. Over both feet and lower part of the legs there was dissociation of sensation (Fig. 4), in that heat, cold, and pain (pin-prick) were not distinguished as such, whilst a light touch (cotton-wool) and firm pressure were normally felt. A pin-prick was occasionally felt as "hot." On the sole of the left foot there was also slight anaesthesia to a light touch. Hyperidrosis or other vasomotor phenomena were not observed.

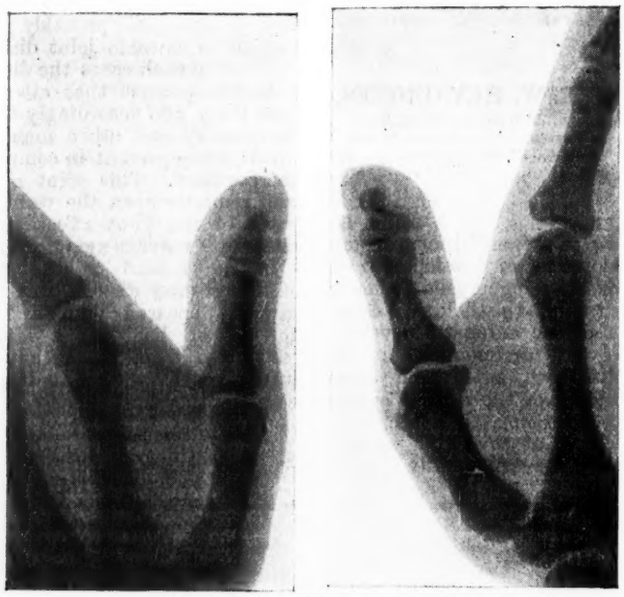

Fig. 2. Case I.—Skiagram of thumbs.

First Operation.

On September 11th Mr. Groves divided all the hamstring tendons, with the fascia at the back of both knees, by subcutaneous tenotomies, and it was possible then to extend the knees slightly. But in spite of long-continued weight extension, and the use of a hinged splint devised by Mr. Maynard, the house-surgeon, it was impossible to obtain full extension. Moreover, the more extended the knees became, the more was a position of genu valgum produced; so that, for walking unaided, the legs were as useless as ever.

Second Operation.

On December 1st the right knee was opened by a U-shaped flap, and the lower portion of the patella removed, the appearances being exactly those found in cases of fractured patella with long fibrous union. The object of this removal was to shorten the quadriceps tendon. The joint being freely opened, the cartilaginous surfaces were seen to be rather vascular and velvety in front of the femur, where articular friction had never taken place. The posterior and crucial ligaments were freely divided, and full extension then became possible. The internal condyle was separated by Ogston's incision, and the leg put up in a normal position. On the left knee an osteotomy was performed just above the condyles, and this allowed correct reposition.

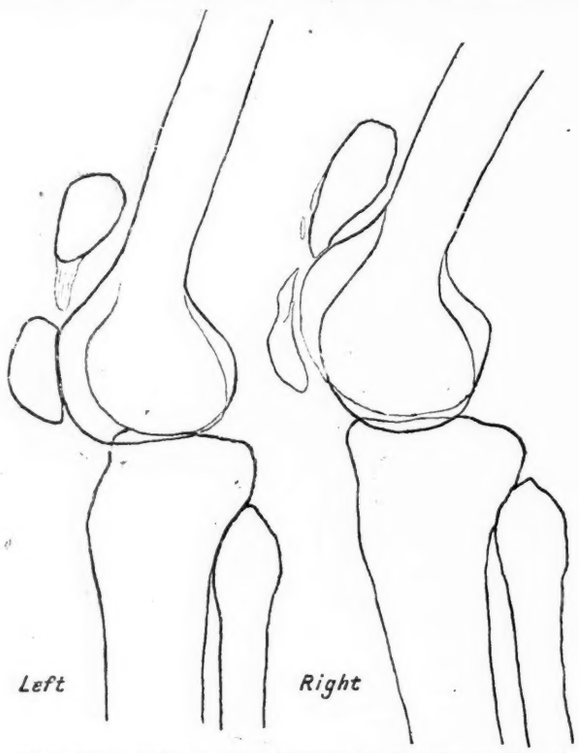

Fig. 3. Case I.—Diagram from skiagrams to show the condition of the patellae.

After-history.

He has since made a good recovery (Fig. 5), and can walk with sticks. The lordosis and hip flexion into which he has grown by long use still remain, but are becoming less prominent as he walks about.

A few remarks may be added as to the nature of the leg deformity. The flexed knees seemed to be due to a spastic paralysis, the marked hypertonicity of the muscles being evidence of this. He had worked from boyhood as a basket-maker, squatting on his doubled-up legs. The condition of the knee-joints resembled the early stages of neuropathic arthritis, inasmuch as there was a painless synovial effusion with partial dislocation. The double patella is a very rare—if not unique—phenomenon, and admits of one or two explanations. Either that a double ossification took place in the quadriceps tendon, or else that a fracture took place after ossification was complete. Now there does not seem to be any reason why an abnormality in ossification should have occurred in this case, and it is always unlikely that two rare conditions should co-exist in the same patient. But if the underlying disease is a syringomyelia, then the fact of both patellae having undergone spontaneous fracture is consistent with the well-known tendency of this affection.

CASE II.

I. F., aged 15; no occupation; sister of the foregoing; admitted October, 1908.

History.

She had never had any bad illness, except that she had an operation performed on the left mastoid three years ago, from which she made a good recovery without any impairment of hearing.

About four years before admission a superficial ulcer appeared on the left big toe, and after some time another came on the right little toe. These ulcers gave her some pain in walking, and were very intractable in healing. Other smaller sores or ulcers affected the toes at various times subsequently. Eighteen months ago she had a large bunion on the right big toe, which became ulcerated. Since then she has had extensive sores on the left toes and foot, which slowly healed. Two months before admission a sore developed on the right foot as the result of knocking her foot slightly, and she applied hot fomentations to it. She did not feel the fomentations too hot, but they scalded her foot and were followed by extensive ulceration; the ulcers gave her slight pain in walking, and discharged freely, but did not prevent her getting about nor disturb her sleep. It was on account of the sores on this foot that she sought advice.

Condition on Admission.

She is a short, fat, thickly-set girl, with a red face and somewhat heavy expression; speech is deliberate, somewhat syllabic, but distinct; intelligence good, but she is slow in answering questions; skull of normal size and shape; face broad and

round; teeth irregular; no evidence of hereditary syphilis; the enamel of the teeth was markedly defective; no paralysis of any cranial nerve; no nystagmus; sight and hearing good; optic discs and retinae normal; pupils equal, and react normally to light and accommodation; chest well developed; thoracic and abdominal organs normal; urine normal; micturition and defaecation normal; spine regular, no deformity, no scoliosis; sacrum and coccyx normal; relative length of thighs and arms to legs and forearms respectively, normal; hands rather broad and thick; no atrophy of muscles in upper extremities; sensation normal to light touch, pain, heat and cold over face, neck, trunk, upper extremities and thighs; over the lower part of the legs and over the feet (see Fig. 6) heat and cold were not distinguished; there was also, but less marked, defective sensation to pin-prick, which was sometimes felt as a prick but more often as a touch; light touch and deep pressure were everywhere promptly recognized and localized, except over the toes of the right foot, the seat of the long-continued ulceration of the skin. The upper limit of defective sensation was well defined to heat and cold, and passed circularly round the limb; to prick it was indefinite, fading away insensibly above. There was no hyperidrosis; the feet inclined to be cold; there was some tendency to flushing of the skin over the left ankle; muscles of legs all well developed, strong, no paralysis of movement, and no incoordination. The muscles acted to both interrupted and constant currents, by direct and indirect stimulation; deep reflexes, in upper extremities normal; knee and ankle jerks much exaggerated, equal on both sides, no clonus.

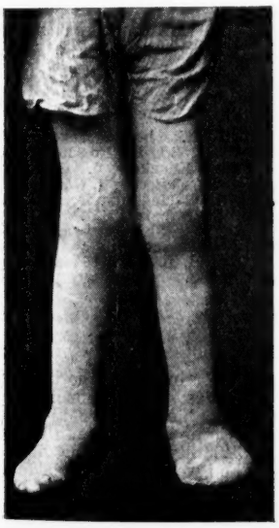

Fig. 5. Case I.—Condition of legs after operation.

Superficial Reflexes.—Abdominal normal; extensor plantar reflex in right foot (Babinski's sign) and often on the left, but is not always obtained on the latter.

Feet.—Very extensive superficial ulceration on dorsum of right foot, involving the great toe and all the other toes, chiefly on their dorsal surface. Under rest and suitable dressings this ulceration healed rapidly, as well as in a normal person, and was completely healed in four weeks. The feet are short and stunted, especially the right, the latter is inverted (Fig. 7). Skiagrams show (Fig. 8) that the right great toe is partly dislocated outwards on its metatarsal bone; there is thus pronounced hallux valgus, and a less degree of it on the left side; both first metatarsals are strongly adducted, this accounting for the increased breadth of the feet. The left first metatarsus is shortened, broadened and enlarged at its head, whilst the corresponding first phalanx is very short, with marked hypertrophy of its base and lipping of its margins. The second toes in both feet and the left fourth toe were shortened, and were soft and "wobbly" as if boneless; the right fourth and fifth toes had disappeared. Skiagrams show that the second and third phalanges of both second toes, of the right fourth and fifth, and left fourth toes have disappeared, whilst the first phalanx of the right second and fifth and left fourth toes have undergone extreme atrophy. In the left foot there is slight pes cavus, partly due to internal angulation between base and shaft of the second, third, and fourth metatarsals. There is some thickening about the right ankle-joint. The knees and legs appeared normal, and the muscles well developed, with the exception of the small muscles of the feet, which were slightly wasted, but reacted to electricity.

Fig. 7. Case II.—Photograph of feet.

It should be added that in spite of the ulcers on the feet and the disease of the bones of the toes the patient was walking about when she came to the hospital. The readiness with which the ulceration healed under appropriate treatment is also noteworthy, and appears to have also taken place in the other cases quoted above.

The skiagrams show that the disease of the bones is mainly an atrophic one of a somewhat remarkable kind; some of the phalangeal and metatarsal bones appear to have undergone a process of atrophy and to have gradually disappeared. Indeed, the appearances of some of the toes of the second case suggest that the bone changes are not always secondary to ulceration spreading from the skin, but that the atrophy of the phalangeal bones is a primary process, for in these toes the soft parts are left

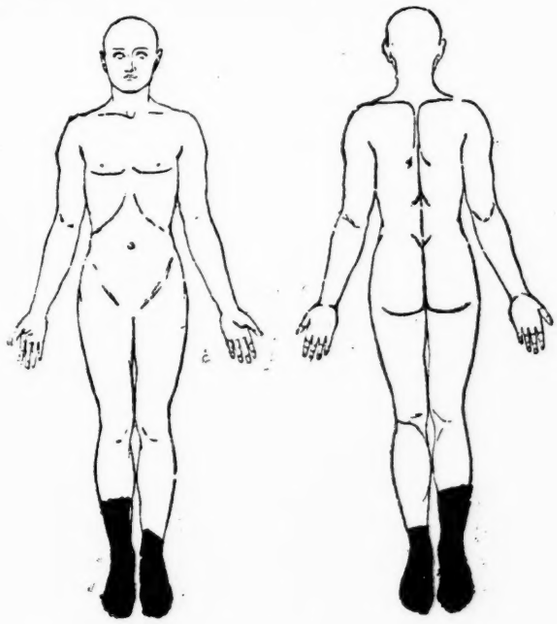

Fig. 4. Case I.—Diagram of sensational disturbance. Over the shaded areas there was loss of sensation to heat, cold and pain (pin-prick); light touch and firm pressure felt.

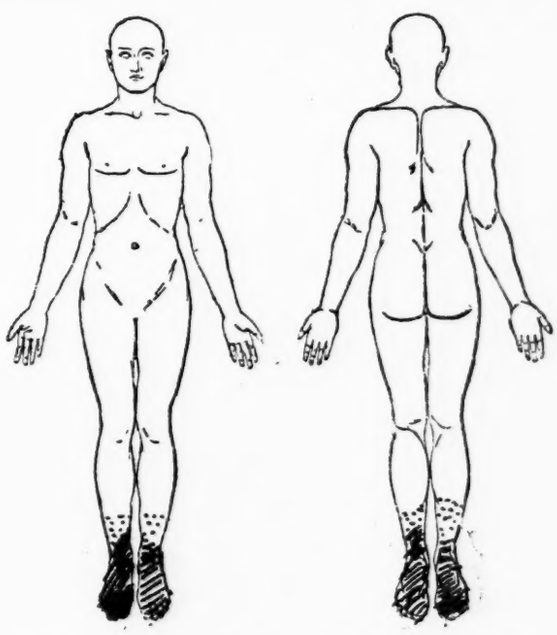

Fig. 6. Case II.—Diagram of sensational disturbance. Over the shaded area heat and cold were not distinguished, felt as touch only; sensation very deficient to pin-prick, generally felt as touch; over dotted area some alterations, but less marked, to pain. Light touch and pressure felt everywhere, except over toes of right foot (black shading).

ntact, while the phalanges have disappeared, or are represented by small atrophic remnants. In this respect they show well the characters described by Tedesco[4] as present in syringomyelia, and which he regards as constituting a special type of bone affection. These characters are: (1) A general transparency of the bone shadows as a whole; (2) diminution and softening of the cortical layer of the diaphyses; and (3) rarefaction of the spongy bone while its gross structural form is retained, so that the external contour or form of the bone is preserved. When the process of atrophy is far advanced, however, the bone gradually disappears, as the skiagrams show. The increased brittleness which accompanies this process of osteoporosis accounts for the occurrence of fractures. Spontaneous fractures, however, do not occur very frequently in syringomyelia—not so much so as one would expect. At the same time, a certain amount of hypertrophy of bone, with lipping of and outgrowths from the ends of the bones, together with periosteal thickenings, go on side by side with atrophy; and similarly in the cartilages processes of absorption and new formation take place. Effusion of fluid into the joints is frequent; there seems little tendency to ankylosis. According to Kienbock,[5] the *x*-ray appearances are against the view which has been brought forward that the bone changes in syringomyelia depend on disappearance of calcium salts.

Fig. 8. Case II.—Skiagram of feet

As to causation, little support is given by these cases to the theory which makes traumatisms play an important part in the production of bone and joint lesions in this disease. We are not now speaking of the joint lesions produced by infective processes through perforating, or other deep ulceration of the skin and subcutaneous tissues. In neither case could any history of severe or even repeated slight injuries be obtained, such as would be likely to directly damage the joints, and the alternative theory which assigns the changes to trophic and vasomotor disturbances seems the more probable one.

In the bone and joint lesions of syringomyelia, the joints most frequently affected are the elbow and shoulder joints. It is possible that the cases under discussion are representative of a distinct but rare group of the disease, in which the sacro-lumbar region of the cord is alone involved, and in which bone lesions are the predominant feature.

Lastly, with regard to the distribution of the disturbance of sensation; in each case this was similar, in that its upper limit passed circularly round the limbs at right angles to their long axis. Catola and Lewandowsky[6] remark on this point that this form of sensory disturbance is not infrequent n syringomyelia, as well as the customary root arrangement, and they attribute it to a partial interruption of the long tracts in the spinal cord, which they think occurs in this disease, and, as cases of tumour of the cord show, can produce a sensory loss with this distribution.

It is our pleasing duty to express our indebtedness to Mr. J. E. Jones, Skiagraphist to the Bristol General Hospital, for the excellent skiagrams.

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[1] Die Erkrankungen d. Knocken u. Gelenke bei Syringomyelie, *Centralbl. f. d. Grenzgeb. d. Med. u. Chir.*, Bd. iv, No. 16, p. 625. [2] *Neurol. Centralbl.*, 1903, p. 599. [3] Die Knocken u. Gelenkerkrankungen bei der Syringomyelie, *Deutsch. Zeitschr. f. Chir.*, 1904, lxxii, p. 513. [4] Ueber Knockenatrophie in Syringomyelie, *Deutsch. Zeitschr. f. Nervenheilk.*, 1904, xxvi, p. 336; abstr. in *Jahresber. u. Neurol. u. Psychiat.*, 1905. viii, p. 600. [5] Abstr. in *Jahresber. u. Neurol. u. Psychiat.*, 1902, v, p. 505. [6] Zu Kenntniss der sensibilstätstorungen bei d. Syringomyelie, *Medicin. Klin.*, No. 21, p. 537, 1906; abstr. in *Jahresber. u. Neurol. u. Psychiat.*, vol. x, p. 625.

A CASE OF ORAL SEPSIS WITH PECULIAR GENERAL SYMPTOMS.

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In view of the interest which at present attaches to all the complications of oral sepsis, the following case seems worth recording:

Mr. T., aged 35, holding a responsible position in a well-known firm of surgical instrument manufacturers which necessitates a good deal of travelling (never beyond the British Isles), had been in good health except for several attacks of influenza and a nervous breakdown at the age of 16 which caused him to abandon a career as a teacher. No previous history of rheumatism, gout, syphilis, gonorrhoea, or alcoholism could be obtained. On March 27th he had aching in the head, back, and limbs. Thinking that it was an attack of influenza, he went to bed and applied some domestic remedies. Next morning he was much better, and in a few days was able to return to work. On April 2nd, whilst out on business, he was taken ill with a violent headache, and had some difficulty in getting home. After two days in bed he felt better, and went to the seaside to recuperate, but whilst there on April 9th, 12th, and 15th, he had similar attacks during which he went to bed, being able to get about in the intervals.

He was first seen by one of us on April 16th, and gave a very clear account of the attacks, which, he said, were all alike. The first thing he noticed was the appearance of a red spot on one limb (near a joint) which enlarged till it was about ¼ in. in diameter. At first painless, it soon began to burn, and then the neighbouring joint became painful and swollen. In the course of a few hours he felt chilly, and his temperature rose to about 103° F.; with the temperature the headache and pain increased, so that the joint could not be moved. About one hour later perspiration commenced, at first slight, but soon so profuse that the bedclothes were saturated. With the onset of perspiration the pain became less, and vanished in about an hour, whilst the perspiration itself continued for about four hours. After an attack he passed a good night, and felt comparatively well next morning.

On this date he looked quite well. He was a thin but wiry man, of a rather neurotic temperament. The pulse and temperature were normal. Nothing abnormal could be found in the chest or abdomen. The tongue was clean but of a rather brighter red than normal. The bowels were regular, the urine neutral, quite clear, and contained neither albumen nor sugar. On the previous day he had had pain and swelling in the right ankle. The joint now appeared quite natural, but over the right tibia there were a few small red spots not unlike erythema nodosum. There was a slight scattered macular rash over the abdomen. With the exception of some labial herpes there were no sores of any description anywhere on the body. No sign of disease could be found in the ears, nose, or throat. He wore a plate of artificial teeth, but had some of his own, which were carious in places, and round some of them the gums were retracted and spongy. He was thought to be suffering from rheumatism, and was ordered 15-grain doses of sodium salicylate every four hours. Two days later he had a further attack which was quite as violent as its predecessors.

On April 21st he was seen during an attack. There was acute pain in the left knee-joint, but at the time of examination no swelling; the spleen was just palpable; there was no heart murmur. The regularity of the attacks suggested malaria so strongly that he was put upon quinine in increasing doses (up to 5 grains four-hourly).

On April 4th he had another attack, during which he was seen by both of us. The temperature was 103.2°, pulse 120, blood pressure 140 mm. The face was flushed and the remains of the herpes were visible; there was just a suspicion of exophthalmos and some tremor of the lips. There was profuse perspiration, with the onset of which the pain had vanished. There was definite swelling, with fluctuation on each side of the left ligamentum patellae; when seen an hour earlier there was no swelling. On various parts of the body there were patches of erythema, the largest on the left forearm being about the size of a shilling. The only abnormality found in the lungs or heart was a soft systolic murmur accompanying the first sound at the apex, heard only over an area the size of the chest-piece of the stethoscope. The spleen was enlarged, easily palpable, but not tender. There was no other abnormality in the abdomen, and the urine was as before.

Blood smears were examined; there was evidently a leucocytosis and a slight eosinophilia (6 per cent.). A diagnosis of septicaemia was made, and a suspicion roused as to there being some infective endocarditis, but it was suggested that the teeth might be at the root of the matter. Treatment consisted of absolute rest in bed, a liberal diet between the attacks, and sodium sulphocarbolate, 5-grain doses. He was ordered to leave out his denture, and to rinse his mouth with permanganate lotion.

Punctually to time, on April 27th, another but slighter attack supervened, the pain and swelling being in the left heel. There was no systolic murmur in this or any succeeding attack. The attacks then became more frequent, there being ten in sixteen days, but they were slighter. The joint pains were less severe, but the erythema was more marked. On May 3rd one of the lower incisors began to ache; on May 4th there was gingivitis round these teeth, and on May 5th, together with a molar stump, they were extracted. The gums healed very rapidly, but the attacks continued. On May 11th 10 c.cm. of blood were taken from a vein in the hope of obtaining a micro-organism from which a vaccine could be prepared, but the culture fluid remained sterile. On May 27th this was repeated with the same result. The faeces were carefully examined, as the periodicity suggested some protozoal parasite. Nothing was found, nor was there any evidence of intestinal catarrh or ulceration. On May 29th the upper incisors, aching and showing gingivitis, were extracted. There was some pus in one of the sockets, but the gums healed well. There was no further attack for four days. After this there seemed to be some slow improvement. The gums round the remaining teeth became affected, and the latter were removed at intervals. There was pus around the neck of most of the teeth extracted. The root appeared as if covered with a fine velvety pile of a reddish yellow colour. Some of them were loose.

After the extraction of the last tooth he had no further attack, and began to gain ground very rapidly. After ten days he was sent to the seaside, and fourteen days later was able to return to work, and at the time of writing is in good health and attending to business in his usual manner.

The diagnosis of this case gave rise to great difficulty. The quartan periodicity of the attacks make it necessary to exclude malaria. The fact that the patient had never been abroad, the absence of parasites from the blood (after quinine had been withdrawn for a month), and the failure of quinine to prevent the attacks are quite sufficient to exclude malaria. Naturally, infective endocarditis was feared; indeed, a senior consultant, who saw the case, gave a fairly confident diagnosis of this disease and a very bad prognosis. The negative result of the blood cultures and the non-appearance of definite signs of organic cardiac disease rendered this diagnosis impossible. Was the case one of the erythemata nearly allied to Henoch's purpura? There was erythema combined with joint symptoms, but there were never any visceral symptoms and the skin lesions were never purpuric.

When we had failed to obtain a micro-organism from the blood and had excluded all other sources of infection, in what was evidently an infective process, we felt it to be our duty to remove the only source of infection we could find, namely, the teeth. The mouth did not appear to be any more septic than in the case of many more people who have apparently perfect health, but the result of the extraction seems to be very strong evidence that we were dealing with a case of oral sepsis of rather unusual character. We found out subsequently that a few weeks before the commencement of the illness the patient had his denture readjusted, and afterwards found it to be uncomfortably tight, in spite of which he continued to wear it. The quartan occurrence of the attacks cannot be explained. It suggests infection by some protozoon with a definite life-cycle. We much regret that we omitted to have the extracted roots examined with this in view. If it can be accepted that oral sepsis was the cause of the symptoms in this case, then it becomes of great interest in view of the recent attempts to show that various "rheumatic affections" are really the results of oral sepsis,[1] a view which our experience shows has much to support it.

We have to thank Professor Beattie for kind assistance in making one of the blood examinations. We publish this case in considerable detail because the scientific value of all evidence for the case of "oral sepsis" depends largely on the exclusion of all other causes of infection.

REFERENCE.

[1] Wirgman, *Clinical Journal*, May 26th, 1909.

A CASE OF APPARENTLY ACUTE SIMPLE FEBRILE ERYTHEMA

ASSOCIATED WITH THE OCCURRENCE OF TWO SUBSEQUENT CASES OF SMALL-POX.

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THE following case raises several points of considerable practical importance:

On Thursday, March 18th, 1909, S. C., a girl, aged 16, living in domestic service in Bristol, complained of a slight sore throat and some headache; she was well enough to "go out" on Sunday, March 21st, as usual, but apparently got worse later, and Dr. Myles was called in to see her on March 25th. He found that she then had a temperature of 102° F.; the tongue was furred, the throat and palate injected, and she complained of pain in the back. She also presented a profuse, soft, papular rash, distributed somewhat generally over the body, most marked on the front and outer side of the upper arm, and on the thighs, less profuse on the trunk, very few papules on face and forehead, and none on the wrists.

The papules were flat and of a dark copper colour; some quite large patches of slightly raised areas occurred, especially on the upper arm, covering the area of a shilling or half a crown. On palpation the papules and raised areas were softish, and gave the impression of being quite superficial, with the exception of a few on the forearm, which felt more rounded, somewhat deeper in the skin, and more resistant. The eruption on the palate and tonsils was distinctly not papular.

The left arm showed two small scars of primary vaccination.

Although the case presented the appearances of a papular erythema accompanied by fever, and not any characteristic appearances of modified or minimal small-pox, she was admitted, as a precautionary measure, to an isolation ward in the city hospitals on March 26th for observation, under the care of Dr. Pauli. On admission the appearances presented were practically unaltered, though the papules showed no signs of development and had become less prominent; the temperature on March 26th ranged from 100.4° F. at 10 a.m. to 102.6° F. at 6 p.m.

On March 27th Dr. Pauli noted that the patient presented in the situations named a deep-coloured or dusky erythematous rash, but the raised condition of the skin had subsided, and no papules could be distinguished. The tongue presented the dirty brown appearance often associated with gastric disturbance. On this day the temperature fell rapidly and evenly from 101.8° F. at 2 a.m. to 99.6° F. at 10 a.m., and to 99.0° F. at 6 p.m.

Under simple treatment the tongue very quickly cleaned; the temperature fell to normal by the morning of March 28th and continued normal; at no time was there the slightest indication of vesiculation over any of the spots or patches, nor did the most careful examination disclose the presence of a single papule which suggested even the most modified or abortive form of the true small-pox papule; the erythema faded quickly, leaving discoloured patches of skin, over which a slight branny desquamation occurred.

The disease was considered to be an acute febrile erythema, which, as pointed out by Dr. Ricketts,[1] is not necessarily symptomatic of any acute specific fever.

As nothing remained but the discoloration under the skin, and the patient appeared to be quite well, she was discharged on April 1st, after a week's stay in hospital, and returned to her home in Somerset, where she remained until April 14th, when she returned to service in Bristol.

On April 21st her brother, a miner, fell ill with semiconfluent small-pox, from which he recovered, and on April 23rd her father fell ill with haemorrhagic small-pox, which proved fatal. Allowing the usual twelve days for incubation, these attacks were both contracted on or about April 9th to 11th, at which time the girl was at home.

There was no small-pox in the town where they lived, but scattered cases had occurred in the immediately adjoining parts of Gloucestershire during March and April, and had been carried thence as far as Yeovil. The brother had ceased work the day before Good Friday (April 8th), and on Easter Monday attended the sports at Wells. In Bristol, too, cases of small-pox had occurred at intervals since the beginning of January, and a contact of a Bristol case (a drover) was due to pass through their home on or about April 11th.

When at home the girl was seen by Dr. Costobadie, who informs me that there was then slight desquamation about the forearms and on the legs below the knees, but no evidence of any sore or abrasions of the skin.

On April 24th, after her return to Bristol, Dr. Myles again examined the patient. She was then apparently in good health, and on examining her skin he found the discoloration persisting over the spots and patches where the rash had been, and in places, particularly over the deltoids, there was a brownish mottling; three of the discolorations on the forearms appeared to be slightly depressed. On May 1st the discolorations over the deltoids had faded considerably, and that over the forearms had disappeared, leaving no trace. A test revaccination performed on this day gave no result.

Upon returning to service this girl slept with a fellow-servant vaccinated in infancy but not revaccinated; this fellow-servant remained perfectly well, and on May 3rd was revaccinated, and took in two places quite successfully. The rest of the master's family, who were revaccinated in March, also remained in perfect health.

It is important to determine whether, as suggested by the time-coincidence of the attacks of this patient's brother and father, her febrile erythema was a manifestation of the small-pox poison in her system; if so, it is quite unique in our experience.

The opportunities of infection in the city were at the time very slight, and at the date when she should have contracted the infection there were no known cases at large; furthermore, she enjoyed few opportunities of visiting friends, and those whom she knew and visited were not ill and did not live in an infected district.

The onset of her illness was not so sudden and definite as the onset of small-pox, however modified, usually is; neither were the course of the temperature nor the appearance, distribution, and development of the rash at all characteristic of modified, minimal, or abortive small-pox, of which very numerous examples have fallen under our observation at the city hospitals during the past quarter of a century. A fine branny desquamation is in no sense suggestive of any known form of small-pox.

On the other hand, the type of small-pox introduced into Bristol and the neighbourhood, apparently from the Sea of Azov, during the winter of 1908–9, has presented many features not only of malignancy, but of eccentricity. No less than 6 cases out of 35 occurring within the city have assumed a fatal haemorrhagic type sooner or later, the incubation stage has been in some cases prolonged to fifteen or sixteen days, the usual interval between sickening and development of the papular eruption has been unduly prolonged, and in three instances the disease has apparently made an unsuccessful attempt to break down the resistance afforded by recent revaccination in the case of nurses, who, however, suffered no harm beyond a two or three days' fever, followed by no eruption, and ending in speedy convalescence.

One of these nurses, returning to duty in the wards of a general hospital into which small-pox had been inadvertently introduced, appears, however, to have herself been in the condition of an "acute carrier," and to have infected a patient in the wards, who subsequently developed a fatal haemorrhagic attack.

The dull colour of the immature papular rash in S. C. its failure to form a true papule, and the subsequent dull and persistent staining suggest what is almost a contradiction in terms—a benignant haemorrhagic attack. If this is possible, as it may be in the case of a singularly searching and virulent infection acting upon a highly resistant individual, the experience is worth recording for the guidance of others.

REFERENCE.
[1] *The Diagnosis of Small-pox.* By T. F. Ricketts, M.D., B.Sc. M.R.C.P. Cassell and Co., Limited. 1908.

FACIAL WRINKLES AND CHARACTER EXPRESSION,

WITH SPECIAL REFERENCE TO THE NASO-BUCCAL ANGLES.*

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FACIAL wrinkles may be defined structurally as persistent infoldings of the skin following the lines of greatest resistance to the mobile play of the features. They presumably mark the sites where in the adult the skin is more closely bound to the underlying structures than elsewhere. Since the subcutaneous tissues are from various causes most resilient in early life, and the frequent emotional brain-storms of babes are short lived and incoordinate in their action, the resultant facial contortions leave as a rule no permanent record of their movements on the surface of the skin. It is not till later in life that the concerted use of certain groups of facial muscles tend gradually to impress the features with individuality, and

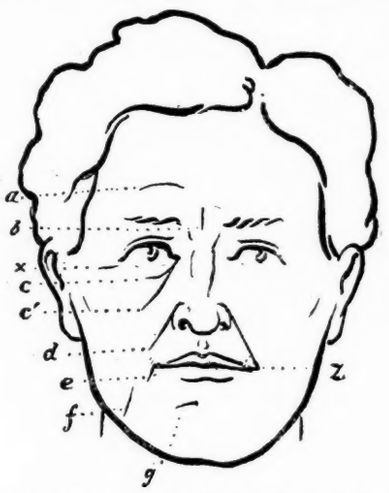

Diagram of the chief facial wrinkles. *a*, Frontal; *b*, glabellar; *c c'*, orbicular and maxillary branches of the tarsal; × palpebral; *d*, alar; *e*, sardonic; *f*, masseteric; *g*, mental; *z* shows the position of the naso-buccal angle on the right of diagram. *N.B.*—Any one of the above wrinkles may be absent from a face, or it may be represented by two or more secondary wrinkles.

in this delineation the chief wrinkles take an active part. They usually become deeper as time goes on, and acquire a persistence, due to their fibrous substrata probably, and to the part they play as *points d'appui* to the neighbouring muscles. If we consider with Professor Metchnikoff that senility is a chronic disease characterized by an increased proliferation of large connective tissue cells, the deepening of the facial furrows in advancing age may be ascribed to the increase of the subcutaneous fibrous tissue by the macrophagic cells at the expense of the surrounding muscular elements. This, however, is as it may be.

The eight or nine chief wrinkles on either side of the mid-vertical map out the face apparently into zones or areas of co-ordinated muscular action. Some of these motor zones roughly correspond in shape and position to the "tender skin" areas of Head (see diagram). The relationship which both Dana[1] and Head[2] have shown to exist between some forms of visceral disease and disturbances of sensation in certain cutaneous areas suggests the existence of a similar linkage between the internal economy and these superficial motor zones; and it offers a plausible explanation why we aptly portray by facial expression the deep-seated malaise of a dietetic indiscretion.

* Read at a meeting of the Brighton Division of the British Medical Association.

The two most constant and, for other reasons, most important wrinkles are the *alar*—those which course across the cheeks in alignment with and just beneath each naso-labial fold. Except in the very young, they are rarely absent from the healthy face. The most attractive part of this inquiry consists in ascertaining by angular measurements the variable obliquity of these wrinkles upon different faces. From its gristly origin beside the nostril each alar furrow passes *directly* downwards and outwards for at least 1 cm. (In my experience it passes otherwise only in a fractional percentage of cases.) If this line is prolonged until it cuts a horizontal passing through the oral angles, the included angle is the naso-buccal (N.B.) angle required. Actual measurements have shown that the acuity of the N.B. angle when the features are in repose may vary in different persons from a little over 20 degrees to upwards of 70 degrees.[3] I shall now consider the etiological factors which may determine this wide range of obliquity in the alar wrinkle.

Fig. 1. Fig. 2. Fig. 3.

Figs. 1, 2, 3.—Infantile type of features, with wide naso-buccal angles (65°+). Note that the alar wrinkles in Fig. 3, the portrait of a young woman, pass downwards to the corners of the mouth, following the lines of the naso-labial folds of infancy (Fig. 1) and childhood (Fig. 2).

Anatomically the mandible (inferior maxilla) is probably the most important factor in this respect. The bone, as is well known, markedly alters its shape during dentition; and so far as the width of the jaw angles is concerned, may revert in the edentulous adult to the condition of early infancy.[4] The modern dentist, by mechanical dentures and other devices to assist mastication, both lessens the distress which loss of teeth entails and checks the atrophic changes in the mandible above alluded to. We seldom now see the "nutcracker" jaws caricatured by Gilray and other gross humorists of the eighteenth century. The extremely acute N.B. angle above noticed was, however, from a face of this type—from an old lady of the great age of 109 years. On the other hand, the cast of features characterized by a powerful masticatory apparatus — the "square jaws" of conventional language—often associated in the elderly adult with hypertonic *depressores anguli oris*, has naturally a wide N.B. angle, that is, one of 60 degrees and upwards. In such cases the free ends of the alar wrinkles drawn downwards along with the corners of the mouth convey an aspect of dogged determination to the face which the strenuous careers of many of the individuals so endowed as a rule historically confirm.*

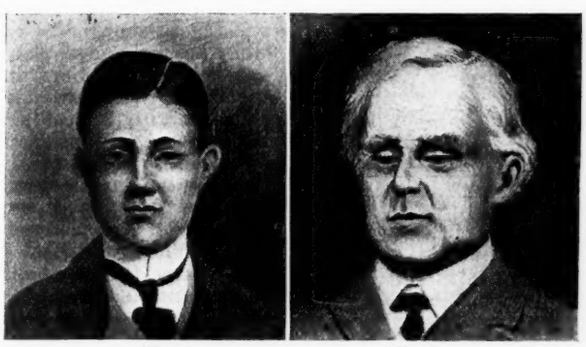

Fig. 4. Fig. 5.

Figs. 4, 5.—Square-jawed type of features (naso-buccal angles 60°+). The alar wrinkles do not meet the corners of the mouth. The depressores anguli oris in Fig. 5 assist by their hypertone in the widening of the naso-buccal angles.

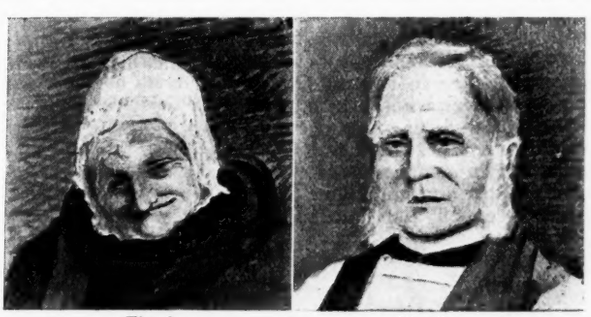

Fig. 6 Fig. 7.

Figs. 6, 7.—Acute naso-buccal angles (40°−). The old lady (Fig. 6) is an example of the nutcracker-jaw type of countenance. The extreme acuity of the naso-buccal angles in these instances is largely due to the persistent hypertone of the buccinators, and to the transverse widening of the mouth in consequence.

In my store of adult portraits the type of face showing the widest N.B. angle is quite unlike that just described. There are a few measurements among that collection of angles of 70 degrees and upwards. These wide angles are, in my experience, found upon the faces of young and popular women, actresses, dancers, society brides, and so forth. We may well inquire why the small bow-shaped mouth and rounded chin of a beautiful woman should be identified with a width of the N.B. angle even greater than that which so fittingly stamps the square-jawed visage of a self-willed man. I must therefore ask you to bear with me whilst I recapitulate some further details regarding the growth and development of this part of the face.

In infancy the orbicularis oris muscle, the great sphincter of the mouth, is largely concerned in the act of sucking. By its rhythmic contractions the close apposition of the mucous membrane of the lips and the surface of the teat is ensured. With the aid of the antagonistic buccinators and lingual muscles a partial vacuum in the anterior part of the mouth is rendered possible. These rhythmic contractions tend to shorten the oral aperture laterally, and to drag the free ends of the naso-labial folds inwards to the corners of the mouth. At the same time the cheeks have a rounded contour, induced partly by the persistent action of the antagonistic buccinators and partly by the subcutaneous deposition of fat. When a small child cries or gapes we can see these folds as they pass downwards on either side to the corners of the mouth, and from them can judge the position of the future alar wrinkles. Now, if we take the N.B. angle of a fold in the usual way, we shall find that in infants an angle of 70 degrees and upwards is not a rare measurement. Indeed, these exceptionally wide angles are common among healthy children of both sexes during their first decade. They become rarer as time goes on; rarer in men than in women, for the latter take more pains to preserve through years of maturity the witchery of their winsome youth.

Among adults, then, we can recognize two types of face with wider N.B. angles than the average — the square-jawed type and the infantile type. The explanation is simple. The acuity of the basal angles in an isosceles triangle depends on the ratio that the base-length bears to the length of a side. When the base is relatively short the angles are proportionally wide. If we now translate these geometric expressions into anatomical language suitable to our subject, we may say that the N.B. angles are wider than the average (1) whenever they nearly correspond in position to the corners of a small mouth, as

* Among the faces of this type were included portraits of a President of the United States, a President of the Royal Society, a celebrated judge, a great lawyer, and a Governor of a great Indian Presidency; among the women was a well-known Doctor of Medicine.

is the case in the infantile type of face; or (2) whenever the apex of completed N.B. △ is much above its average position at the bridge of the nose. The latter condition implies unduly long sides to the N.B. △, and is observed specially in the square-jawed type of face. How intimately these trigonometrical relations are connected with character-expression is shown in the lessened N.B. angle of the fixed smile of photographic portraiture, and how necessary it therefore is in an inquiry of this kind to obtain these facial angles whilst the features are at rest.

Before concluding I shall briefly refer to the mechanism whereby the creeping of a wrinkle as age progresses is presumably induced. Many of the observations already recorded cannot otherwise be satisfactorily explained unless we admit that this slow change of position takes place occasionally. I have examined the successive portraits of eight persons photographed at different periods of their lives. These pictures show that a divergence of 7 or 8 degrees in the obliquity of the N.B. angle may in some cases occur within a few years. The cause of the "creeping" must, I take it, be sought for in the prolonged hypertone of some of the muscular areas bordering the wrinkle and the hypotone of others antagonistic to them; and these excito-motory changes, again, may be due to continuous psychical exaltation or depression, so often associated with success or failure in the schemes of life.

The following figures may be provisionally accepted:

Average Value of Naso-buccal Angle in 149 Adults (above 17 Years).

	Adults.	Men.	Women.
At all ages (100 M.)	55 3°	53.4°	60.9°
Forty-two above 70 (34 M.)	51.1°	50.7°	54.1°
One hundred and seven below 70 (65 M.)	57.6°	54.7°	62.4°

REFERENCES.

[1] A Clinical Study of Neuralgias and of the Origin of Reflex and Transferred Pains, *New York Med. Journ.*, July 23rd and 30th, 1887. [2] Disturbances of Sensation, with especial reference to the Pain of Visceral Disease, *Brain*, vol. xvii, pp. 339-480. [3] Lavater (1772) noticed the divergence of the "lineaments or traits of the cheeks," *Essays on Physiognomy*, translated by Thos. Holcroft, n. d., p. 474. [4] In adults the angle of the jaw is about 120 degrees or less, in infancy 140 degrees or more; in the edentulous it again becomes widened to 130 or 140 degrees (see Humphry, *The Human Skeleton*, p. 293; *Quain's Anatomy*, ninth edition, vol. i, p. 56).

UNUSUAL CASE OF FACIAL PARALYSIS.*

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THE facial nerve, whilst in the aqueduct of Fallopius, bears a close relation to the middle ear. After leaving the chamber situated behind the hiatus Fallopii, wherein the genu is placed, it passes backwards and downwards at right angles to its previous direction in the upper and posterior part of the inner wall of the tympanum; here it is in relation to the fenestra ovalis below, the ampullary ends of the external and superior semicircular canals above, and the vestibule to its inner side.

ETIOLOGY.

The main etiological factors of facial paralysis may be grouped under three headings:

1. *Central:*
   Tumours in and at the base of the brain.
   Meningitis.
   Nuclear degeneration, as in labio-glossal paralysis.
2. *Osseous* (in the Fallopian canal):
   (*a*) Inflammation extending to the osseous walls, thence to the sheath and to the nerve itself.
   (*b*) Caries and necrosis of the aqueduct, the destruction extending to the nerve itself.
   (*c*) Injury to the nerve during operations on the accessory cavities of the middle ear.
3. *Terminal* (after exit from the stylo-mastoid foramen):
   (*a*) Injuries to the nerve.
   (*b*) Implication in cellulitis and growths in the neck.
   (*c*) Influenza, diphtheria, and syphilis, giving rise to neuritis.
   (*d*) And, finally, that type, yclept rheumatic, frequently met with, and usually ascribed to a cold or draught on the face, and for which sometimes no cause can be assigned.

But it is a matter of some doubt whether all these so-called rheumatic palsies should be ascribed to colds or draughts. Lake[1] states that they are frequently due to a transient acute inflammation of the middle ear, in which suppuration has not taken place, and quotes Sir William Dalby as having pointed out, in 1872, that many of these cases, said to have resulted from exposure to draughts, were frequently due to an acute otitis media, "the pain of which was so slight and evanescent as to have been quite overlooked both by patient and physician."

It is to the second or osseous division that the subject of these notes applies. An acute inflammation in the tympanum may easily extend to the osseous walls of the Fallopian canal, and thence to the sheath, and so to the nerve itself; the accompanying infiltration and exudation, by exerting pressure on the nerve in its unyielding surroundings, will suspend its physiological activity. Then, usually, as the inflammation resolves and the pressure lessens, the nerve recovers more and more of its function.

Therefore this type is not serious.

On the other hand, in a case of chronic otorrhoea, no matter how small a quantity of pus is being discharged into the meatus, the onset of facial paralysis is a serious symptom, indicative of a grave condition both of the nerve and of the patient himself, for it shows that necrosis is taking place in the temporal bone. The disease may be situated in the middle ear, or perhaps in the antrum as well; but, wherever placed, the paralysis indicates that necrosis is extending to the Fallopian aqueduct, and thence to the nerve itself. The close relation of the aqueduct with its contained nerve to the labyrinth has already been mentioned, therefore it will readily be understood that the facial paralysis may easily be a symptom of that very serious condition—suppurative labyrinthitis. As a matter of fact, investigation[2] has shown the facial nerve to be involved in no less than 83 per cent. of cases of labyrinthine necrosis.

Therefore this symptom is a clear indication for early surgical interference.

TERMINATIONS OF FACIAL PARALYSIS.

The terminations of this condition may be briefly summarized as follows:

1. Return to normal function.
2. Persistent paresis of the whole or of part of the nerve.
3. Complete permanent paralysis.

Maggie G., aged 9, came to the Ulster Hospital in June, 1907, stating that she had been unable to close her right eye for the past fortnight, and gave a history of previous double otorrhoea. She was unable to wrinkle any of the muscles on the right side of her face, the right palpebral fissure was widely open, the lower lid showed a tendency to fall away from the eye, and on telling her to close her eyes the eye itself was rotated upwards, but the eyelids did not move; she was unable to lift her lips to show her teeth on the right side. Owing to deafness, she had to be spoken to loudly and distinctly. A little thick pus was found in the right meatus, and the greater part of the right tympanic membrane had been destroyed; no history of headache, vomiting, or pain. She was admitted, and on June 6th a complete post-aural operation was performed on the affected side. The cavity was packed and the wound sutured up completely. Twelve days later she was discharged and ordered to attend daily to have the wound dressed, and for galvanism, the paralysis being only slightly less.

July 22nd. The paralysis not cleared up yet, though less; attendance for galvanism very irregular; very little scar on site of external wound.

August 15th. Paresis decreasing; can now shut right eye and open her lips so as to show her teeth on the right side; still very irregular in attending for galvanism.

October 21st. Hearing equal in each ear, though a little subnormal, as low tones are not well heard. Still slight paresis on right side of face.

On May 25th, 1908, practically twelve months later, the patient presented herself at the hospital with an almost complete paralysis of the left side of the face, the onset having taken place two days previously.

She was unable to close the left eye or lift the lips so as to show the teeth on that side; the furrows in the cheeks were obliterated; no history of pain in the ear or of otorrhoea, no vomiting or vertigo. Patient had to be spoken to in a fairly loud voice, owing to deafness. The left tympanic membrane has been almost wholly destroyed; the handle of the malleus can be seen foreshortened and protruding *in situ*, but deprived of

* Read at the spring meeting of the Ulster Branch of the British Medical Association, Londonderry, May 8th, 1909.

its usual support of tympanic membrane; pus seen in the tympanum.

May 28th. Large perforation seen in the posterior superior wall of the meatus ½ in. from the orifice, débris presenting. Complete post-aural operation performed on left side, débris found in tympanum, cavity packed and wound closed.

May 29th. Patient looks well, paralysis not so marked.

June 1st. Wound healing well; can now close left eye, and slept during the previous night with eye closed.

June 4th. Paralysis fast resolving; can close eye, lift the lips, and smile now; wound healing, sutures removed.

June 11th. Wound quite healed; paralysis cleared up considerably; still deaf, having to be spoken to loudly.

June 17th. Paralysis almost cleared up, hearing much improved; can hear ordinary voice now, whereas had to be spoken to in a loud voice previously.

June 22nd. Paralysis cleared up; can elevate lips on this side better than on the right side, but left palpebral fissure still a trifle more open than right; can screw up both eyes easily.

It must be somewhat unusual to meet a case presenting similar features on each side of the face at an interval of almost exactly twelve months. It is instructive, too, in comparing the different periods of time which the two nerves required to return to their normal function, the right taking quite five months, though probably less would have sufficed had she attended regularly for galvanism which was ordered, as the actual duration of the paralysis prior to operation was uncertain, and with the view to remedy the soft and atonic state of the facial muscles, but unfortunately, owing to her irregularity of attendance, no true deduction can be made as to the effect of this treatment. On this side the paralysis had existed certainly for a fortnight, and probably for longer, whereas on the left side it had only shown itself two days prior to advice being sought, and cleared up entirely in less than a month after operation.

The rapidity with which the paralysis cleared up on the left side as compared with that on the right at once suggests the advisability of early surgical interference in cases of this sort, in order to save the nerve alone from permanent injury, and further to save the patient from a serious osseous lesion in the temporal bone, of which the facial paralysis is an outward and visible sign.

REFERENCES.

[1] R. Lake, *Diseases of the Ear*, p. 103. [2] Politzer, *Diseases of the Ear*, p. 477.

A CASE OF MULTIPLE PLEXIFORM NEUROMA ASSOCIATED WITH BROWN PIGMENTATION OF THE OVERLYING SKIN.

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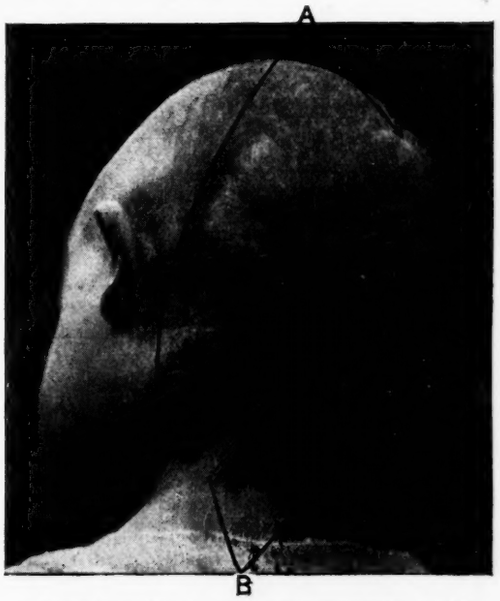
AFTER reading Mr. Lenthal Cheatle's interesting paper in the JOURNAL of June 12th, it occurred to me that the notes of the following case might have some bearing upon the question of neurotrophic influence in pigmentation.

A female child, aged 5 years and 4 months, came under my observation in April last during the routine inspection of the Berkshire schools. There was a swelling of the left side of the neck behind, extending from the left superior curved line of the occiput above, down over the complexus as far as the level of the first dorsal spine below, and extending round in front as far as the anterior border of the left sterno-mastoid muscle at the middle of its length. Posteriorly it was limited to the left side of the neck by the ligamentum nuchae. Soft and semisolid to the touch over the occipital bone, the tumour below was found to consist of firm masses, feeling like glands, ranging in size from a hazel nut to a pea, and more or less bound together by adhesions. The growth was thickest between the posterior border and the upper third of the sterno-mastoid and the outer border of the complexus. The skin over the whole of the tumour, with the exception of the occipital part, was stained brown. This stain was most marked over the prominent belly of the complexus, but extended as far as the middle line of the neck in front and also lower than the tumour below, becoming fainter and mottled at the edges. The opposite side of the neck was very faintly pigmented. The photograph (which unfortunately had to be taken in the country) is intended to show most of this pigmentation as well as the scar of the operation. The history is as follows:

The pigmentation was first definitely noticed at the age of 2 years. (The mother is quite clear on this point, as her friends used to remark that she had omitted to wash the child's neck.) It began at what is now the upper part of the stain behind, and extended slowly downwards and forwards. It was not until more than a year later that a swelling was noticed to commence beneath the upper part of the pigmented skin. There was no pain, but slight tenderness, which had of late increased, neither had the child suffered in general health. The child had enlarged tonsils when seen by me, but no other physical signs to aid or complicate diagnosis. The family history was negative.

As I was at a loss for a positive diagnosis, and the practitioner in attendance was equally anxious to settle any doubts as to the nature of the swelling, we removed the child to University College Hospital, where it was seen by Mr. Wilfred Trotter, who made the diagnosis of plexiform neuroma. We had the opportunity of witnessing the removal of the tumour by Mr. Trotter later in the day, when it was seen to consist of lobulated masses of fibrous tissue held together by strands, and almost inextricably mixed up with the muscle fibres in the neighbourhood, which latter fact rendered removal most difficult. After the greater part had been removed, it was decided to leave the rest for a second operation.



A, Scar of operation; B, *maximum* pigmentation of skin.

I am informed by Mr. H. M. Davies, surgical registrar to the hospital, who examined microscopical sections, that bundles can be seen which resemble normal nerve bundles, but that it is doubtful whether they contain nerve fibres, the contents in the main consisting of short curling strands of fibrous tissue with well-marked nuclei. The wound healed by first intention, but the scar is now (a month later) becoming keloid.

I am indebted to Dr. D. G. Kennard, under whose care the child is, for permission to publish this case.

A CASE OF SO-CALLED DELAYED CHLOROFORM POISONING.

BY CONRAD DE L. CAREY, M.B., B.C.CANTAB.,

GUERNSEY.

THE following case seems to me to be typical of the condition described by Dr. Guthrie as "delayed chloroform poisoning" in a child the subject of chronic suppuration in the form of a caseating abdominal gland. The rapidity of death and low range of temperature are against any form of sepsis introduced at the time of operation.

I was sent for recently to see a boy, J. H., aged 3 years 2 months, who had been "out of sorts" for the week previous to my visit, suffering from diarrhoea. The temperature was

100°, and there was a certain mount of general abdominal tenderness, but no rigidity or tender spot. The motions were green and extremely offensive. Next morning the temperature was still 100°, and there was distinct tenderness over the appendix area, but there was little abdominal rigidity; there had been no vomiting. I saw the child again that evening, when the mother told me that he had had a good deal of pain throughout the day. The temperature was then 102.5°. Pulse 120, abdomen slightly distended and acutely tender over the appendix, with rigidity of the muscles. My partner, Dr. E. L. Robinson, agreed in the diagnosis of acute appendicitis

Next morning I operated. The patient was given chloroform throughout the operation. He took the anaesthetic well, kept a good colour, and gave no anxiety. I made an incision 1 in. in length over the usual spot, and on passing in my finger felt what at first I took to be the tip of a much enlarged appendix. On drawing this out of the abdomen I found it to be a gland, about the size of a large pea, and acutely inflamed. After removing this I found the appendix. There was one old adhesion, and it was thickened. After removing the appendix I inserted my finger into the abdomen again and felt a mass apparently behind the caecum, from which extended what I took to be a chain of glands towards the liver. I then closed the abdomen and put the child back to bed about 1 p.m., the operation having taken just under one hour.

I again saw the patient at 4.30 p.m., when the nurse reported that he had not vomited, had dozed as much as three-quarters of an hour at a time, and was fairly comfortable. The pulse was 120, and the child had a good colour and facies. He vomited at 6 p.m. and 8 p.m., each time after having sips of hot water. At 9.30 p.m. his pulse was still 120, and he was somewhat restless, but otherwise seemed doing well; temperature 99°. At 7 a.m. I received a telephone message, and on arrival at the hospital I found him unconscious, tossing about, grinding his teeth, and making faces. The nurse said that he had had a good night up till 5 a.m., when he awoke from a sleep, vomited some mucus stained with "coffee grounds," and then commenced grimacing and gradually lapsed into unconsciousness. His pupils were equal, reacted to light, and were slightly dilated. The extremities were rather cold; pulse 130 and soft. I ordered him a hot saline enema, and gave a hypodermic injection of 2 minims of liquor strychninae. The child died without a struggle at 10 a.m., exactly twenty-two hours after the operation.

On inquiry from the mother, I found that five months previously the child had been ill for three weeks with a "bilious attack" and abdominal pain.

I obtained permission to make an examination of the abdomen. The site of the operation was normal, the appendix stump was buried, and there was no sign of leakage nor of general peritonitis. On examining the mass I had felt at the operation, it proved to be a caseating gland, the size of a walnut. This I removed for examination. The liver was extremely pale, and on section was canary colour, with here and there streaks of purple. I drew off some urine with a catheter, and found that it reduced Fehling's solution.

I sent the gland removed at the operation, the appendix, the caseating gland, and a piece of the liver to the Clinical Research Association, and received the following reports:

"This appendix shows chronic inflammatory changes in the mucous membrane and proliferation of the lymphoid tissue. It presents no evidence of tubercle. The gland, on the other hand, is typically tuberculous. It contains giant cell systems, some of which are undergoing caseation.

"This liver shows fatty degeneration of the hepatic cells, but in addition there is a leucocytic infiltration around the vessels and bile ducts in Glisson's capsule. This suggests an infective or septic cholangitis, which we conclude must have existed before the operation. The gland contains definite caseating giant cell systems, which are certainly tuberculous. It is possible that delayed chloroform poisoning may have something to do with the fatty degeneration, but we cannot help thinking that it is more likely to be a septic condition."

I may add that no carbolic acid was used at the time of operation.

TREATMENT OF THE SMALL INTESTINE IN OPERATIONS FOR INTESTINAL OBSTRUCTION.*

BY C. HAMILTON WHITEFORD, M.R.C.S., L.R.C.P.

GIVEN a case in which the intestine is completely obstructed, either in the region of the caecum, or higher up in the small bowel, what are the duties of the surgeon?

In a patient almost *in extremis* the actual obstructing cause has to be neglected, and an enterostomy—that is, opening and draining the first distended coil which presents through a small median abdominal incision—is all that is justifiable, and may give the patient a fighting chance.

To a patient who can stand a general anaesthetic the duties of the surgeon are two:

1. To evacuate completely from the distended bowel the quarts of liquid which are poisoning the patient and are paralysing and causing a succession of partial kinks in the intestinal walls.

2. To restore the patency of the intestinal tract by either (*a*) removal of the obstruction, or where this is impossible by (*b*) a short-circuiting operation.

A partial, as opposed to a complete, emptying of the distended bowel is not infrequently performed, simply because the surgeon finds that, without this partial evacuation, it is impossible to replace within the abdomen the whole of the distended intestines. The time occupied by the operation must always be an important factor in the prognosis of these cases. But, while the time-consuming process of making a series of incisions into the distended coils remained the only efficient method of emptying them, the surgeon has usually contented himself with emptying the bowels sufficiently to allow of their being replaced within the abdomen.

It is hardly surprising to find that in many cases the intestines, in their paralysed, kinked, and crowded condition, fail to empty themselves even after relief of the original obstruction, the patients dying, poisoned by the foul intestinal contents.

The plan devised by Moynihan, of emptying the intestines by threading them on a straight tube, has placed in the hands of the surgeon a means by which the distended bowels can be rapidly and completely emptied. The tube, made of either metal or glass, is 8 to 10 in. in length and ¾ in. in diameter. The end, which is inserted into the bowel, is cut obliquely with smooth edges. Two inches from the other end is a flange, and beyond the flange the tube terminates in a rubber tubing for conducting away the intestinal contents. In selecting a tube it is necessary to make certain that the oblique end of the tube is quite smooth and blunt. Some of the tubes on the market lack both these essentials, and are well calculated to injure, or even perforate, the engorged and softened intestine.

A loop of bowel, emptied preferably by a milking movement, is clamped by the fingers of an assistant, and is incised longitudinally on its convex border. The tube is inserted, and the bowel and tube, wrapped in gauze, held by an assistant so as to prevent leakage by the side of the tube. As each coil is emptied the collapsed bowel is threaded on to the tube by the surgeon. Each inch of the tube will carry a foot of collapsed intestine. The intestinal incision is best made in the centre of the distended bowel, so that the tube may be passed first upwards to empty the jejunum, and then through the same intestinal incision downwards to empty the ileum. If, when the tube has been completely loaded with collapsed intestine, there still remains unevacuated a short length of bowel, its contents can easily be removed by milking them down to the end of the tube. It is quite easy in fifteen to twenty minutes to empty the whole length of the small intestine.

The conclusions which this paper is intended to emphasize are:

1. Excluding those cases which are nearly moribund and in which an enterostomy is all that is justifiable, it is essential that the operation, in addition to relieving the obstruction, should empty the distended small intestines of their poisonous contents.

2. The most efficient and rapid method of emptying the small intestine is to adopt Moynihan's plan of threading them on a straight tube.

[The method of using the tube was demonstrated on a model. In replying to the discussion on the paper, it was pointed out that the method, the value of which the reader of the paper had personally proved, was not of very recent origin, being at least three years old.]

* Read before the South-Western Branch of the British Medical Association.

LEPROSY CONFERENCE.—The conference on leprosy recently held at Bergen unanimously passed the following resolutions: (1) It is necessary that in countries where leprosy exists means of segregating the sufferers should be provided. (2) It is desirable that the children of lepers should be separated from their parents as soon as possible and kept under observation. (3) Those who have lived with lepers should be examined from time to time by practitioners having special knowledge of the subject. The last resolution was based on the possibility of the transmission of the disease by means of sucking insects.

SEVENTY-SEVENTH ANNUAL MEETING
OF THE
British Medical Association.

Held at Belfast on July 23rd, 24th, 26th, 27th, 28th, 29th, and 30th.

PROCEEDINGS OF SECTIONS.

SECTION OF DISEASES OF CHILDREN.

HAROLD J. STILES, M.B., F.R.C.S.Edin., President.

DISCUSSION ON FUNCTIONAL NEUROSES OF CHILDREN.

OPENING PAPER.

By J. A. COUTTS, M.B.Cantab., F.R.C.P.,
Physician to the East London Hospital for Children, Shadwell.

THOUGH the title selected for this discussion is brief, it covers so much ground that it would be impossible to deal with everything lying within it on any single occasion. I propose, therefore, merely to draw the attention of the Section to some of the more salient debatable points in the diseases grouped together under the general heading of our discussion. Even with these limitations, the number of questions to be considered is large, so, as the time at our disposal is comparatively short, I shall not attempt to deal with any single point exhaustively or to weld my remarks into one consecutive whole.

Taking "functional" in its ordinarily accepted sense, as implying an absence of any hitherto recognized structural change, permanent or temporary, in the nervous tissues, there are several functional neuroses that start in earliest infancy.

The first that occurs to me is one of faulty deglutition, that has received little attention in the textbooks. In such cases an infant has from the start of feeding, maternal or artificial, a difficulty in swallowing. When the milk has reached the back of the pharynx, instead of being directly swallowed, it is there rolled and rattled after the manner of the expert gargler of maturer age. After being thus rolled at the back of the pharynx for a longer or shorter interval, it is eventually swallowed, and the process is repeated with each fresh mouthful. In exceptional instances such faulty deglutition may be the first symptom to call attention to a palate defect. Ordinarily, however, there is no defect in the palate, which moves well, and regurgitation through the nose is a very occasional occurrence. The complaint may so interfere with nutrition that nasal feeding may temporarily have to be resorted to, but usually the only drawback to the condition is the time occupied over a meal, this last often taking nearly an hour instead of twenty minutes or less. In cases starting at birth the difficulty vanishes, or becomes less, when the food is thickened at the appropriate age. Reversing this order, there are other cases where the difficulty in swallowing is only encountered for the first time on the change from the purely liquid to more solid food. To this class Dr. Still[1] has lately called attention. Whether starting at birth or in later months, the defective swallowing evidently lies in a lack of co-ordination of the muscles concerned with deglutition. In the course of time the nerve centre gradually gains the control of co-ordination, and the trouble disappears in later infancy.

Another habit connected with food in older children, scarcely deserving the name of neurosis, is one with which most of us are acquainted—where a child, on food being placed in its mouth, retains it for a considerable time without making any effort at mastication or deglutition. As such children ordinarily show no sign of malnutrition, my explanation of the habit is that the child finds the allowing it to be placed in the mouth, and retaining it there, is the easiest, or the most polite, way of declining any food for which he has either a dislike or no inclination at the time of presentation.

Another developmental neurosis is concerned with the faulty action of the respiratory centre. It is instanced by unduly rapid breathing on the part of infants, dating from birth, and this rapid breathing increases into a hurried panting of over 100 to the minute whenever the children are lifted or moved. They present no evidence of atelectasis, nor would this last account for the remarkable increase in rate of respiration at every change of posture. Atelectasis, however, is the danger most to be dreaded as an addition to the existing condition. Such cases are only seen in infants a few days old, and the only explanation I can suggest to account for them is that the respiratory centre is at fault, and in need of education, if I may so term it, to meet the extrauterine conditions imposed upon the infants. This was the explanation I offered in the first case of the disorder I met with, and I further suggested that, if the infant escaped the danger of atelectasis, the respiratory centre would gain the power of normal control in the course of time. The father, a medical man, two years later sent me word that my prediction had been verified, that the breathing had gradually decreased in rapidity, and that the child was then healthy in every respect. A previous infant in the same family had died at a few days old; and more recently I have come across another family where two infants succumbed in the first week with the same respiratory trouble.

Congenital tremor is a condition so rare that it is not mentioned in any textbook on children's diseases with which I am acquainted. My experience of it is limited to a single family, where the only three members of it were the subjects of this form of tremor, one in a marked and the remaining two in a scarcely noticeable degree. In the marked case the tremor had been noted at birth, and in the other two in early childhood. I could not gather whether there was any family history of tremor on the part of either parent. When I first met the subject of the marked tremor he was about 45 years of age, and the disorder had been so little detrimental to him that he had attained the rank of colonel in the army. When at rest no tremor was ordinarily discernible in the limbs, but the head was incessantly oscillated from side to side. There was no nystagmus, the muscles of the face were only occasionally and slightly affected, and speech was perfect. On any purposive movement the limbs involved were thrown into marked tremor, and in moments of agitation this last would become so violent as seriously to interfere with locomotion or the grasp of objects. My patient was seen by several eminent neurologists, one of whom recognized the complaint as congenital tremor, and had met with one or more examples of the same condition. The remaining authorities, after discussing the possibilities of disseminated sclerosis, mercurial, alcoholic, and other forms of tremor, only to reject each one, confessed that the condition was as new to them as it was to me. The interest in such cases for us at this Section is that the condition can exist at birth and persist throughout life. In my patient the tremor was so marked in infancy that I was credibly informed, and can believe, that it served to rock his cradle. The milder degrees of the complaint are, perhaps, more common than is generally supposed, and I have thought that some of the cases of so-called simple tremor, starting about the age of puberty, and some of the persistent cases of cerebellar ataxia are possibly akin to this congenital disorder.

Of pyloric stenosis in infants I have some diffidence in speaking, not only because my experience of the complaint is a limited one, but because of my uncertainty as to whether it can be regarded as a purely functional neurosis. That gastric spasm can increase any existing obstruction goes without saying, but whether the pyloric obstruction can originate solely from spasm may be open to question. I am free to confess, however, that authorities like Thomson,[2] Guthrie,[3] Still,[4] Hutchison,[5] and most of those with the greatest experience of the disorder, seem to entertain no doubt on this point. My colleague, Eustace Smith,[6] indeed, has lately made the suggestion

[1] G. F. Still: *Common Disorders and Diseases of Childhood.*

[2] John Thomson: *Clinical Examination and Treatment of Sick Children.* Second edition.
[3] Leonard Guthrie: *Functional Nervous Disorders in Childhood.*
[4] G. F. Still: *Common Disorders and Diseases of Childhood.*
[5] Robert Hutchison: *Lectures on Diseases of Children.* Second edition.
[6] Eustace Smith: *Practical Treatise on Disease in Children.* Third edition.

that the complaint may be due to the presence of food causing eclamptic attacks limited to the stomach, such attacks being akin to the general convulsions that occur in some infants immediately after every meal. With the authorities I have mentioned holding the opinions they do, I have every justification for introducing pyloric stenosis as one of the subjects for discussion at this meeting. My object in doing so, however, is not to discuss its pathology, but to bring forward some views that have appeared in recent publications as to its frequency and its successful treatment apart from operation. John Thomson, to whom in conjunction with our President, the profession is mainly indebted for its knowledge of the complaint, has since 1894 met with 41 cases of the disorder, in 40 of which the result was known, but of these 27 were submitted to operation with 8 recoveries, and the remaining 13 went without operation with 9 deaths. Still has met with 42 cases, in 36 of which the history was complete. Out of the completed cases 14 were operated on with 8 recoveries, and 22 were treated medically with an equal number of recoveries and deaths. It will be noticed from these figures that there is a considerable difference, difficult to account for, between the percentage numbers of cases submitted to operation and that of recoveries, both with and without operation, in Thomson's and Still's cases. The difficulty is still further increased by figures and views lately published by Hutchison. He states that in his private practice, apart from his hospital one, he has treated 14 cases by medical means alone, with but a single death. In the fatal case, moreover, he is in doubt as to whether it was a genuine one of pyloric stenosis. The view he arrives at, and emphasizes by italics, is that "operation is never in any circumstances justified in these cases." If lavage of the stomach be intelligently persisted in, along with appropriate feeding, he would never counsel operation, no matter to what degree of exhaustion and weakness the infant should be reduced. If I read him aright, indeed, he would seem to regard exhaustion as a helpful factor in the stoppage of gastric spasm, and has found this last continue in many cases until the necessary degree of weakness has been attained. There are, then, evidently conflicting opinions amongst authorities as to the advisability of operation. The discrepancy is so great that one is tempted to ask, "Are the numerous cases in the practices of Hutchison and others that yield so readily to medical treatment of the same nature, or of the same severity, as those where operation is so often deemed necessary at Edinburgh and elsewhere?" We are fortunate in having our President here to throw light on this point.

Another query I would like to raise is as to the alleged frequency of the complaint. My own experience would lead me to regard it as extremely rare. That a large majority of the cases in Scotland and the North of England should fall under Thomson's care will surprise nobody, and his large number is easily accounted for. Under the circumstances, that he in the course of sixteen years has only met with 41 cases would seem to me confirmatory of my impression as to their rarity. Hutchison, however, writes that it is "probably very much commoner than is generally supposed," and he is "perfectly sure that any one who is capable of diagnosing it will meet with cases in his practice not very infrequently." If this be so, then many besides myself must be lacking in this diagnostic ability, notwithstanding that the signs of the complaint are sufficiently definite and characteristic. During the last dozen years I have only met with a single instance of it in the Shadwell Hospital, and the experience of my colleagues is no greater at that hospital than my own. The *post-mortem* records, too, at Shadwell lend no support to the view that it is in any way a frequent disorder, and, as far as I can gather, in a dozen years the only three necropsies made on cases of pyloric stenosis were on ones where a current diagnosis had been arrived at in the wards.

Most of the cases of functional neuroses in older children occur in the class possessing what is vaguely known as the "neurotic temperament." Prominent features of this "temperament" are undue excitability and emotionalism, and a proclivity to frequent rises of temperature from slight or not obvious causes. Excitability in the children referred to may materially interfere with appetite and sleep, and any slight pleasure or childish trouble leave them in a state of exhaustion accompanied by insomnia. Their heightened emotionalism is evidenced by a ready interchangeability of laughter and tears, and repeated transient attacks of slight facial twitching or difficulties with speech may occur, which may be the forerunners of a more pronounced and permanent habit-spasm or stammering in later years.

These few words sufficiently indicate the class of children with which we are all familiar. The class is, of course, an exceedingly numerous one, and it is only a small minority of it that ever become the subjects of definite neuroses, either in childhood or adult life. There is a smaller section of children of which the majority, in my opinion, eventually become the subjects of neuroses, and that is the one comprising children who have suffered from convulsions in infancy.

Many years ago Hughlings Jackson[7] pointed out the identity of the phenomena of infantile convulsions with those of an epileptic fit, and asked if it were likely that infants presenting such a marked disturbance from such slight causes, as, say, the cutting of a tooth, were likely to pass through life without further nervous disturbances at times of stress or strain upon the nervous system. My experience would substantiate the relevancy of this query.

About twenty years back I made an inquiry into the after-histories of children who had suffered from convulsions in infancy, and found out of those who had reached the age at least of puberty, about 50 per cent. were the subjects of definite neuroses, beginning with epilepsy at one end, and habit-spasm or migraine at the other end of the scale.[8] Donkin[9] considers that my statistics should be discounted to a slight extent, inasmuch as that in some cases it was the late neurosis that led to the inquiry as to the convulsions in infancy; and the criticism is a valid one. On the other hand, a large proportion of my cases had just reached the age of puberty. Had the full life-history of such cases been obtainable, it is possible that the percentage with neuroses might have been considerably higher.

Rickets is another complaint which, in my opinion, is responsible for a certain number of neuroses in later life. Taken in its widest sense, it is a disease of malnutrition in which the brain suffers along with the bones and the rest of the tissues. The cerebral involvement is evidenced by the numerous nervous disorders associated with the disease. Now, the rachitic age is the time of the relatively greatest evolution and development of the infantile brain. It is not unnatural, then, to expect that interference with the cerebral nutrition at such a period, even when it stops short of the causation of convulsions, should occasionally lead to nervous manifestations in the near or distant future. Statistics as to the percentage of neurotic children that had suffered from rickets to the percentage of rachitic infants that develop neuroses are valueless, however, owing to the varying estimates as to what might fairly be deemed rickets in very numerous instances.

The first of the more definite neuroses of older children that I propose briefly to deal with is cyclic vomiting. It is generally described as a separate and distinct complaint, but I have never been able to satisfy myself that it is not merely a phase of migraine in young subjects. The main symptoms—headache, vomiting, and constipation, with or without some degree of pyrexia—are the same in both disorders, the only difference being that vomiting in the one, and headache in the other, assumes a greater prominence. The acetone and diacetic acid in the urine that were once supposed to be almost pathognomic of this special form of vomiting, have of late years been shown to be accompaniments of severe vomiting associated with other complaints. In a large percentage of children with cyclic vomiting there is a history of migraine in one or both parents, and migraine, it has been said, "breeds true." Others besides myself, moreover, have traced cases of cyclic vomiting into later years where it has been replaced by unmistakable migraine. The fatty changes in the liver and other *post-mortem* features that have been discovered in a few fatal cases of supposed cyclic vomiting engender a doubt as to

[7] Hughlings Jackson: *Reynolds's System of Medicine.*

[8] J. A. Coutts: Infantile Convulsions in Connexion with Later Neurotic Tendencies, *Trans. International Medical Congress*, Washington.

[9] H. B. Donkin: *Diseases of Children.*

whether they were in reality of such an innocent character. The beneficial effects of large doses of bicarbonate of sodium, both in the intervals between and during the attacks, cannot be regarded as specific to cyclic vomiting until they have been tried and failed in other allied neuroses. Other points of connexion between cyclic vomiting and migraine could be stated, but enough have been given for purposes of discussion.

Migraine proper, in the typical form it takes in adults, with the symptoms of which some of us are only too familiar from personal experience, only seldom occurs in childhood before the age of puberty. When it does occur pyrexia is often added to the main symptoms of headache and vomiting, a point to which Sir William Gowers[10] was the first to call attention. In spite of the infrequency of the adult type, migraine is common enough in children. In these young subjects it is characterized by recurrent periodic attacks of fever and drowsiness, the associated headache and vomiting being usually of only a subsidiary prominence. Such attacks are more frequent than is commonly supposed, owing to mothers being satisfied with ascribing them to that mysterious protean disorder, "biliousness," and deeming no further advice necessary regarding them. I know of two instances where migraine started in infancy, and where the symptoms in the first attacks not unnaturally caused grave anxiety. In each of these, after vomiting as an initial symptom, the infant passed into a state of profound stupor, accompanied by fever and irregular pulse. Such symptoms sufficiently resembled those of meningitis to justify alarm, and the mere rapidity of onset could not wholly negative the last complaint. The frequent repetition of similar attacks removed anxiety, and their true nature was revealed by their being superseded by unequivocal migraine in later years. Each of these infants, I may add, became the subject of migraine in its most pronounced and inveterate form. Attacks of profound stupor and pyrexia may, of course, usher in complaints, such as pneumonia, in young children, but the stupor in such cases is usually more prolonged than in those of migraine, and the diagnosis is only cleared up by the advent of other symptoms peculiar to the complaint.

Incontinence of urine is not an inspiriting theme, nor is it a complaint out of which the practitioner ordinarily gains much credit. It is, nevertheless, of high importance owing to the distress it often causes both the sufferer and his parents, and on account of the undeniable restraints it places on the former with regard to school life and social surroundings. A small percentage of cases, generally in girls, are incurable, owing to structural bladder defects. But in a large number of the purely functional cases the treatment is unsatisfactory and ineffectual. The list of drugs, headed by poisonous doses of belladonna and atropine, and the many other measures that have been advocated by way of treatment, only testify to the frequently inefficacious nature of most or all of them. We can, it is true, assure the parents that, with very rare exceptions, the complaint is ordinarily outgrown in the course of time, but such assurance is seldom received with any amount of enthusiasm, and the time occupied in the outgrowing is one of considerable misery to all concerned. Any treatment, then, based on reasonable grounds, and promising an improvement over the usual ones, will be given a ready trial by the profession. Many of us have, doubtless, seen a series of articles in the *Lancet* and elsewhere, by Dr. Leonard Williams,[11] where he claims to have achieved phenomenal success in the treatment of the disorder by thyroid extract. According to him, the subjects of urinary incontinence have usually subnormal temperatures, and in addition many of them have high arched palates, and are of defective height or weight. Varying combinations of these features are to Dr. Williams indications of some degree of thyroid inefficiency, and it is upon such a hypothesis that his treatment is based. He gives details of 25 cases, many of them of severe enuresis, both nocturnal and diurnal, in 24 of which the success of the thyroid treatment was immediate and complete. It is but just to state that Dr. Williams's views are put forward with a moderation that should ensure his mode of treatment a reasonable trial. If any present have already had the opportunity of testing this treatment, it would be of interest if they could give the meeting the results.

Incontinence of faeces need not detain us long, and in my opinion it can scarcely be classed as a functional neurosis. Apart from diseases affecting the spinal cord, such as Pott's disease, and very occasionally anterior poliomyelitis, mental defects, stone in the bladder, and local affections of the rectum, incontinence of faeces, in my experience at least, is almost invariably due to carelessness and inattention on the part of the child.

My remarks on lienteric diarrhoea need be equally brief. The complaint may occur in infants of later age and at any period of childhood, and I have found it almost as frequent in the adult as in the child. The textbooks write of arsenic as being almost a specific in the disorder, but in my hands this drug has frequently failed. Far more efficacious than arsenic I have found a mixture of bromide and bismuth, along with a well-fitting cummerbund to the abdomen, and a temporary limiting of the carbohydrates in the diet.

Some twelve years ago I wrote an article on night terrors[12] in which I pointed out that almost every writer on the complaint assigned a different cause for their occurrence. I further endeavoured to show that much of this want of agreement arose from a non-discrimination on the part of the writers between two distinct disorders arising during sleep, in which terror plays a conspicuous part. For the frequent and trivial one, which most of us have experienced both in childhood and adult age, I proposed the use of the very usual name of nightmare, and that the name "night terrors" should be restricted to a far less common disorder of some distinct clinical importance. As a cardinal point of distinction between the two, I suggested that in nightmare it was sufficient that the patient should merely "dream dreams," whilst in night terrors it was essential that he should "see visions." I have not a copy of my original paper by me, but I cull the other points of distinction I made from Dr. Leonard Guthrie's fascinating book on functional nervous disorders of childhood:

That night terrors seldom occur in children over 8 years of age, whilst nightmare may happen at any age.

That night terrors occur during the best of health, whilst nightmare attends chronic ill health.

That in the course of a night there is usually but a single attack of night terrors, although there may be several of nightmare.

That in night terrors there is a family history of neuroses, such as epilepsy, chorea, hysteria, etc. In nightmare there is no such history.

That infantile convulsions usually precede night terrors, but not nightmare.

That in night terrors the child seems wide awake, but is not so. He still sees the vision which has terrified him, and is unconscious of his surroundings. In nightmare he is wide awake, only partially demented by recollection of a troubled dream. He is fully conscious of the presence of others in the room.

In night terrors there is no recollection of the event, whereas in nightmare there is a perfect recollection and dread of recurrence.

In night terrors the nature of the vision never varies; in nightmare the objects of apprehension have generally been met in waking hours, and are not invariably the same.

I accept Dr. Guthrie's summary of the distinctions as substantially embodying those that I drew. The statement, however, that infantile convulsions *usually* precede night terrors does not convey my meaning; "not infrequently" instead of "usually" would have better expressed it. Whilst many authorities have accepted my views without reservation, others—like Drs. Guthrie[13] and J. Taylor[14]—consider that I have drawn too hard-and-fast a distinction between cases of night terrors and those of nightmare, and I have to admit there is force in their criticisms. Nearly all, at any rate, would seem to attribute a greater importance to the class of case to which I propose to restrict the name of "night terrors." The two may grade into one another, but the class of cases in which children "see visions" is, I would still contend, of greater gravity, both as regards the family histories and the possibility of

[10] Sir William Gowers: *Diseases of the Nervous System.*
[11] Leonard Williams: Adenoids, Nocturnal Enuresis, and the Thyroid Gland, *Lancet*, May 1st, 1909.
[12] J. A. Coutts: *American Journal of Medical Sciences*, February, 1906.
[13] Leonard Guthrie, loc. cit.
[14] James Taylor: *Nervous Diseases in Childhood and Early Life.*

future neuroses, than the one in which they merely "dream dreams."

The same distinction that I draw between night terrors and nightmare might equally be drawn between cases of ordinary talking during sleep and those for which I would suggest the term "somniloquism" should be restricted. Just as it happens occasionally to some of us to

Dream of the Devil and wake in a fright,

so still more frequently does it occur, if the testimony of others is reliable, that we talk in our sleep. Many children and adults, in sound bodily health and free from neurotic taint, do so habitually, and nothing is thought of it. But surely a distinction should be drawn between cases of a habit that is common to many of us, and the much rarer ones in which a child breaks off suddenly from sleep, sits up in bed, and holds long conversations with imaginary persons in the room, and though apparently wide awake, is totally unconscious of its surroundings. It is to this last class I would restrict the term "somniloquism," if there is any advantage in retaining it at all. All the distinguishing features of night terrors are common to it and "somniloquism"; in fact, the two complaints ordinarily occur in the same subjects.

The remaining subjects in my synopsis—tics, chorea, and hysteria—must sound a formidable trio to bring in, at this stage of my paper. My intention, however, is merely to point out some errors that are occasionally made in discriminating between these complaints. The number of disorders grouped under the designation of "tics" is an exceedingly large one, but my few remarks will be confined to the variety known as simple tic or habit-spasm, where the involuntary movements characteristic of the whole group are confined to groups of muscles of the face or upper limb. It is now well known that habit-spasm often arises from a local exciting cause, but, nevertheless, I find it is a point that is frequently forgotten or neglected. The first step in treatment, then, should be a reliable examination of the eyes, ears, throat and teeth, etc., with a view to the discovery of such exciting cause and its amelioration. Until comparatively recent years habit-spasm was generally regarded as a phase of chorea, and Dr. Hutchison writes that there is no doubt the two disorders tend to pass into each other, a contingency of which my experience affords no instance, neither have I found frequent association of the complaint with rheumatism that others have discovered. The differential diagnosis between the complaint and chorea ordinarily presents no difficulty. Apart from differences in the character of the movements in the two complaints, chorea is never, for any length of time at least, restricted to any single group of muscles. In spite of this, one still meets with children with habit-spasm whose skins are pigmented and tongues silvered from a long course of arsenic administered under a mistaken diagnosis of chorea. The mistake may be a serious one, for a correct diagnosis is essential if the spasm is not to become inveterate and persistent into adult life.

Just as chorea is never restricted to a single group of muscles, so, I believe, it is never strictly unilateral. That it may be largely restricted to one side, of course, is true enough, but careful examination will always, in my experience, reveal some amount of movement in the other. Cases of supposed strictly unilateral chorea are, in my opinion, more correctly classed as hysterical tremor. I have known children treated for many weeks for unilateral chorea without improvement, where encouragement, the confident prediction of improvement, and the judicious use of the battery have wrought recovery in as many days.

Another phase of the same complaint, in which a mistaken diagnosis is occasionally made, is hysterical palsy. In children this commonly takes the form of a monoplegia, usually of a leg. Here the flaccid, cold, and wasted condition of the limb, together with an absent knee-jerk, sufficiently closely resemble the results of an anterior poliomyelitis to render the mistake in diagnosis a not unnatural one. Now anterior poliomyelitis occurs in two well-marked clinical forms. In the one the paralysis is sudden in onset, is confined to one limb or a part of one, and is attended with no disturbance of the general health. This form of the complaint is restricted to infancy, and is, perhaps, unknown at the age at which hysterical palsy is ordinarily seen. The onset, too, is more often gradual in hysterical palsy than sudden. The other form of anterior poliomyelitis, which is the only one seen in older children, but occurs, of course in infants as well, commences with marked constitutional disturbance, such as pyrexia, delirium, and occasionally convulsions. In the course of a few days the paralysis is widely spread over the body and limbs, and from this point recovery gradually sets in, but is never so complete but that one or more region is not left permanently disabled. There is no history corresponding to this in cases of hysterical palsy. Considerations such as these should serve to clearly differentiate between the last affection and either form of poliomyelitis, to say nothing of the assistance furnished by the electrical reactions and characteristic gait in the functional disorder.

There are other aspects of hysteria in children that I should have liked to briefly touch upon, but time compels me to forbear. I have only touched the fringes of the large subject of functional neuroses in children, and my selections have been based on controversial rather than any other grounds. If, however, there are no limits to the subject set me, there are to your patience, and I conclude with the hope that my disjointed remarks may lead to fruitful discussion.

DISCUSSION.

Dr. SHUTTLEWORTH (London), dealing with the psychic element in neuroses, said that his excuse for intervening in a discussion on functional neuroses in children was the fact that many neuroses were of *psychical* origin, at any rate in children of inherited neurotic temperament. Personally, he had much to do with children of this latter type, and had frequent opportunity of noting the interdependence of psychical and neurotic conditions. Emotional excitability was the characteristic of this class, and this was often combined with defect of control and judgement, and sometimes with an exuberant imagination. If twentieth century neurotics did not suffer so much from bogey tales served on them by injudicious nurses as did those of former years, the more romantic character of the children's books of to-day was perhaps responsible for some neuroses passing into psychoses. There was always a fear of morbid fancies of neurotic children becoming obsessions. Charles Lamb had given a pathetic account of how such obsessions of phantasies of the darkness embittered his boyhood, and some one had placed on record how a gigantic hand, the sign of a glover's shop, had haunted him, threatening to crush him in its grasp. He might quote one or two instances from his own experience:

The domination of a child's mind by morbid concepts issuing in insistent and strange fears, which have been generally classed as "phobias," is not uncommonly observed in nervous subjects. I have for some years had under my care a boy of neurotic antecedents, who at an early age exhibited a frantic terror of the bath, and more specially of bubbles arising therefrom when he was immersed therein. This he gradually overcame, only to manifest what I may call a cynophobia (or kunophobia)—that is, a most unreasoning fear of dogs, however gentle they might be. Intellectually—that is, educationally—he is not much behind the standard of his age, and gradually he has been induced by gentle methods to overcome his nervousness, and even to fondle an Aberdeen terrier who goes walks with my little pupils. Formerly he would scream and run away when he descried a dog a hundred yards away down the street, but he now passes any dog he meets without any sign of terror. This illustrates the mode of treatment of such cases—that is, to familiarize the child with the object which has terrified him, much as a shying horse is pacified by being led up to and allowed to sniff at and listen to a motor car which has affrighted him. The nervous tremors to which he was formerly subject are gradually subsiding.

"Night terrors" are but an exaggerated form of the same tendency, and full doses of bromide at bedtime are often of value in breaking the vicious habit of waking in a fright, due attention being also given to the removal of any cause of digestive irritation and of mental overstrain.

A curious phobia sometimes seen in children is what has been called "mysophobia"—that is, a morbid fear of soiling hands and dress, which causes anxious distress in the little patient, and may be compared with the hyperconscientiousness which one sometimes notices in pubescent girls.

The neurotic child, wrongly treated, tended to develop confirmed psychoses, and in many instances morbid obsessions, which made the poor child's life a misery. These might also lead to moral obliquity at puberty.

Mr. SYDNEY STEPHENSON (London), in discussing the necessity for correcting errors of refraction in some of the functional neuroses of children, said:

One phase of the functional nervous disorder known as "habit-spasm" falls not infrequently under the notice of those who practise ophthalmology.

A child, most frequently of from 5 to 12 years, who is almost invariably described by his mother as "nervous," is brought for advice on account of jerking movements of the eyelids, often accompanied by a drawing-up of the angle of the mouth. A less common manifestation is a trick of turning the eyes themselves suddenly upwards or downwards. These signs may, and often do, make up the sum total of the ailment. But there may be convulsive movements of the tip of the nose, the forehead, shoulders, arms, hands, or legs, and a tendency to make uncouth noises, variously described as "grunting," "clucking," "sniffling," or "hiccoughing."

It is widely recognized that the condition outlined above is little influenced by drugs, of which the favourites appear to be arsenic and the bromides. More is usually to be gained by taking the child from school and by sending him to the seaside or to the country.

Now the point I desire to emphasize about many of these cases, more particularly those in which blinking of the eyelids is the chief manifestation of the habit-spasm, is that correction of any error of refraction, no matter how trivial it may appear, will often check the "tic" as it is sometimes called. I have seen many instances of this sort, and have accordingly come to look upon the provision of spectacles as forming an essential part in the treatment of such cases. At the same time I am very far from asserting that a pair of glasses will cure every case of habit-spasm. My experience, however, amply warrants the claim that many cases are benefited by so simple a means.

In these cases the eye appears to form, as it were, the starting-point of a reflex irritation, which in a neuropathic child may determine the singular spasm under discussion. It is probable that almost any other source of peripheral irritation, such as inflammation of the conjunctiva, adenoids, worms, a decayed or painful tooth, or a tight and adherent prepuce, might have a similar effect in a child whose nervous system was in an excited and overstrung state.

In the following case the sequence of cause and effect was clearly shown:

CASE I.

Arthur K., a nervous and stuttering Jewish lad of 7 years, was brought on January 14th, 1902, because he was stated "to blink at night." The condition, which dated from an attack of conjunctivitis two years before, had become more marked lately. On examination, vision $\frac{6}{6}$ and No. 1 Jaeger. A drop of atropine placed in the eyes stopped the spasm as soon as the pupils were dilated. The refraction was found to be hypermetropic, with some astigmatism (plus 2.0 D. sph., with plus 0.5 D. cyl. axis 90 degrees), and glasses were ordered to be worn for all purposes. When the lad was seen a month later (February 13th, 1902) there was no habit-spasm. The glasses were then directed to be worn for reading alone. Some nine months later (November 28th, 1902), however, he was again brought, with the history that blinking had recurred during the last three days. The symptoms speedily disappeared when the glasses were again worn constantly. It was noted that the eyes were steady when the spectacles were in place, but spasm recurred the moment they were taken off. When last seen, on March 21st, 1903, there had been no recurrence.

The distinction between habit-spasm on the one hand, and incipient chorea on the other, is now and then more difficult than might at first sight appear. The points to which I am accustomed to attach the most importance are: (1) The repetition and localized nature of the convulsive movements; (2) the long duration of the symptoms without particular alteration; and (3) the cessation or reduction of the spasm as soon as accommodation is paralysed, as it can readily be, by placing a drop of atropine (or other cycloplegic) in the conjunctival sac. The following case is of interest because, until it fell under my care, it was considered by a most competent colleague to be an instance of chorea:

CASE II.

Charles L., aged 9 years, had been treated for chorea for four months before I saw him for the first time on September 4th, 1906. He was a sleepwalker, and was apt to talk about his school lessons in his sleep. He had suffered from night terrors. He showed blinking of the eyes, twitching of the nose, movements of the mouth, and shrugging of the shoulders. Upon examination, a drop of atropine placed in each eye stopped the spasms at once. The refraction was plus 1.5 D. sph., with 1.5 D. cyl. axis 90 degrees. Spectacles were prescribed for constant use. October 23rd, 1906. With glasses on, no blinking, which supervenes the moment they are removed. January 1st, 1907. Eyelids now steady, with or without glasses. January 28th, 1908. Recurrence of the twitching, which is said to be present even during sleep; atropine at once relieved the child of the symptom. August 25th, 1908. After a period of complete freedom the lad is now said to be blinking again. May 4th, 1909. The patient seldom blinks, although he is apt to do so when excited.

The following cases are taken almost haphazard from my notebooks:

CASE III.

Martha N., aged 12 years, was referred to me by Dr. George Carpenter on March 21st, 1902. Blinking was frequent, the eyeballs occasionally moved rapidly upwards, and the nostrils twitched. V. $\frac{6}{6}$ and No. 1 Jaeger. Under atropine: R. V. $\frac{6}{12}$, plus 1.0 D. sph., with plus 0.5 D., cyl. axis 180 degrees, $\frac{6}{6}$; L. V. $\frac{6}{18}$ plus 1.5 D. sph., with plus 0.5 D., cyl. axis 180 degrees, $\frac{6}{6}$. Spectacles for constant use were speedily followed by cessation of all the symptoms of habit-spasm.

CASE IV.

Edward K., aged 11 years, attended on March 28th, 1905. Since a severe attack of scarlet fever three years ago he has been affected with unsteady and blinking eylids, and the condition is believed to be getting worse. The right is said to be more affected than the left eye. Movements of the lips have also been observed. The lad, who is in the fifth standard at a council school, is described as "fearfully nervous." His mother is in an asylum for the insane. On examination, R.V., $\frac{6}{9}$ and No. 1 Jaeger; L.V. $\frac{6}{6}$ and No. 1 Jaeger. On April 11th, 1905 (under atropine), R.V. $\frac{6}{24}$ minus 0.5 D. sph., with plus 2.5 D. cyl. axis 80 degrees $\frac{6}{12}$; L.V. $\frac{6}{6}$ plus 0.5 D. sph. axis 80 degrees $\frac{6}{6}$. On May 9th, 1905—that is, about a month later—the lad was stated to be much less "nervous," while the blinking was absent as long as the glasses were in place, but recurred, in modified form, as soon as they were taken off.

CASE V.

Hubert W., aged 11 years, first seen on March 22nd, 1904, on account of blinking of the eyelids, present for about six months. Child described as "very nervous." V. $\frac{6}{6}$. Under atropine, R.V. $\frac{6}{6}$ plus 0.50 D. sph., with plus 0.25 D. cyl. axis 90 degrees $\frac{6}{6}$; L.V. $\frac{6}{6}$ plus 0.25 D. cyl. axis 90 degrees $\frac{6}{6}$. Glasses were prescribed for constant use, and when the patient was seen on May 3rd, 1904, the habit-spasm had practically disappeared.

CASE VI.

Mary L., aged 9 years, seen at the Evelina Hospital, London, on September 3rd, 1907. The history was that she had commenced to twitch her fingers and hands three years ago, but the symptoms passed off without medical treatment. A year ago the face began to "twitter." She was described as a very excitable child. There was no history of rheumatism, and the heart sounds were normal. On examination, R.V. $\frac{6}{9}$ and No. 1 Jaeger; L.V. $\frac{6}{6}$ and No. 1 Jaeger. Under atropine, R.V. $\frac{6}{18}$ plus 1.5 D. $\frac{6}{6}$; L.V. $\frac{6}{12}$ plus 1.5 D. $\frac{6}{6}$. Fundi normal. Glasses (plus 1.0 D. sph.) were prescribed for constant wear. When seen on September 16th, 1907, the face was much steadier, and the improvement, according to the mother's statement, had set in as soon as the glasses were obtained. The child was last seen on January 5th, 1909—that is, about sixteen months after the glasses had been prescribed—and there was neither blinking of the eyelids nor twitching of the face. The sight with glasses was $\frac{6}{6}$.

There would be no difficulty in multiplying the recital of cases in which, in my experience, spectacles have relieved habit-spasm, although no useful purpose could be served by doing so.

In conclusion, I may be permitted to lay some stress upon one or two points; the first of which is that children whose habit-spasm is relieved by glasses seldom complain of symptoms which point to eye-strain, such as would be likely to put the practitioner upon his guard. The difficulty is increased by the fact that the sight of such children is usually good, and on occasion may even exceed the ordinary standard ($\frac{6}{6}$=1). No dependence whatever should be attached to an estimation of refraction that has not been made when accommodation has been fully paralysed by the use of atropine. Lastly, the ametropia—invariably, in my experience, hypermetropia with or without astigmatism—should be almost fully corrected by glasses to be worn for every purpose.

Dr. GEORGE CARPENTER (London), in discussing the difficulties of diagnosis, said that a point of considerable practical importance, and often of considerable difficulty,

was the separation of the organic from the functional. He narrated a case in which the difficulties were extreme, and in which the original diagnosis of a functional neurosis was incorrect.

A girl, aged 12 years, was admitted into hospital with hemiplegia, which was admitted by all to be functional. While under observation she developed amblyopia. This was pronounced by a well-known ophthalmic surgeon to be a case of functional amblyopia. She recovered under a normal régime.

Many months later she was again attacked in a similar way, and again recovered in due course.

Subsequently on a third occasion amblyopia recurred, and when she presented herself in the out-patient department it was found that there were then pronounced ocular symptoms, and it was then obvious that she had commencing optic atrophy, which negatived the original diagnosis. She was under observation for some eight years, and during this time she became more and more mentally defective, and finally died of syphilitic meningo-encephalitis.

Hypertrophic stenosis of the pylorus, in Dr. Carpenter's experience, was not common, and only five well-marked examples had come under his care. Personally he did not accept a diagnosis of hypertrophic stenosis of the pylorus unless the pylorus could be felt, and that was easy if the abdomen were examined thoroughly. One most important method was to grasp the whole of the abdominal contents between the thumb and forefinger, when the indurated and enlarged pylorus would be detected. Propulsive vomiting did not denote hypertrophic stenosis of the pylorus, and the retention of two or three feeds did not denote hypertrophic stenosis, whereas the detection of the tumour if neither of these symptoms was present was diagnostic. If propulsive vomiting and the retention of two or three feeds were taken to indicate hypertrophic stenosis of the pylorus, then Dr. Carpenter said he could claim a considerable experience of the disease and considerable success in its treatment, whereas the converse was the fact. These features did occur in some neurotic children, and they might or might not be due to pyloric spasm; they certainly had a functional basis, and dyspepsia was a prominent feature. Hypertrophic stenosis of the pylorus began to show symptoms when the mucous membrane of the stomach became swollen, and was a catarrhal stenosis implanted upon an organic basis, much as a swollen ureteral mucous membrane completed retention of urine in a case of organic urethral stenosis. In the specimens that he had seen the pylorus readily admitted a No. 4 catheter. The holding of water by the stomach did not denote the capacity for preventing the passage of food, because during life the conditions were very different. Surgical results had in his experience been unfortunate, whereas medical treatment had proved eminently successful. He was not in favour of surgical treatment in these cases, and he certainly should make a good trial of medical measures before seeking the assistance of the surgeon.

Dr. ESSEX WYNTER (London) dealt with the subject of treatment, and narrated the case of a girl of 17, at first to all appearance suffering from hemichorea. Complete hemianaesthesia supervened, causing the diagnosis to be modified to one of neuro-mimesis. He did not consider that cardiac lesions bore any essential relation to chorea, for both rheumatism and chorea were infantile complaints, and 50 per cent. of all cases of chorea had organic heart disease, and every one of these latter cases had had either rheumatic or scarlet fever. He would like again to draw attention to the great value of chloretone as a sedative for the cerebral cortex in neuroses, and especially in chorea. The routine use of this drug had reduced the time necessary for the suppression of choreic movements to an average period of nine days, and practical convalescence was assured in three weeks. He had found peeling of the hands and feet occasionally produced in patients while taking chloretone, and also an erythematous rash. That remedy was, however, not nearly so successful in the more chronic cases of chorea, while paralytic cases did not respond at all to it.

Alluding to nocturnal enuresis in children, he found that a great improvement might often be brought about in the course of a single week, without resorting to the use of any drug, by having the child waked at regular but gradually lengthening intervals from every two hours onwards.

Dr. J. W. SIMPSON (Edinburgh) discussed the question of pyloric stenosis. He said that having been associated with Dr. John Thomson for the last five or six years in the Sick Children's Hospital, Edinburgh, he had had an opportunity of seeing a number of his cases, and, from seeing these, could only agree with Dr. Coutts that, although a number of cases could be cured by medical means alone, there were a certain proportion that certainly required surgical interference. The difficulty seemed to be to know in what cases, and at what time, surgical means should be resorted to. Some cases with projectile vomiting and well-marked peristaltic waves, etc., were cured by medical means alone, and, on the other hand, other cases with the same type of symptoms went downhill quickly; and in the *post-mortem* room, when the condition of the pylorus was examined, it seemed impossible to believe that anything but surgical means could have been of any avail.

Dr. LESLIE said that he had first been struck by the value of chloretone for sea-sickness, but found it equally useful in the more acute cases of chorea. As a rule, patients taking it should keep to the recumbent position, or troublesome giddiness was apt to appear. In his experience of enuresis amongst boys in a large boarding school, and previous to that on a training ship, he had found a considerable improvement might be brought about by careful management, preventing any fluid being taken later than 6 p.m., waking the boys concerned periodically in the night, while amongst drugs he had found the fluid extract of *Rhus aromatica* the most valuable.

Dr. JOHN MCCAW (Belfast) thought true hypertrophic stenosis of the pylorus was anything but common in the neighbourhood of Belfast. He totally disagreed with Hutchison's dictum that all such cases were curable by medical treatment. He described one case in particular in which *post-mortem* examination showed a huge mass of hypertrophied tissues surrounding the pylorus and producing a stricture of it. In addition, as the result of forcible peristaltic efforts, the greatly hypertrophied mucous membrane of the stomach had produced a very perfect valvular closure of the pyloric aperture, quite impermeable to water *post mortem*. To all appearance such a condition could not be remedied except by surgical operation. The most successful medical regimen to be followed consisted in washing out the stomach periodically, rectal feeding combined with food not exceeding half a fluid ounce for a meal, along with warmth and a flannel binder round the epigastric region. He thought some cases of enuresis were quite incurable, and were associated with some degree of mental defect. Careful regulation of the diet often brought about some improvement, more particularly in the direction of limitation of the carbohydrates, whereby less acidity arose from fermentative causes. Another point of value in the treatment of such cases was to evacuate the rectum at bedtime rather than on rising.

Night terrors and nightmare were, he thought, hardly known in Ireland. At any rate, the onus of curing them was, by the medical profession there, largely thrown upon the parents, who received little sympathy from doctors in regard to them, as they were looked upon as largely due to faulty modes of bringing children up.

He did not think all cases of chorea were rheumatic in origin, but for those that were, sodium salicylate brought about as rapid a cure as any other line of treatment. In some cases it had no apparent effect.

Mr. HAROLD STILES (President of the Section) said that he was convinced that many cases which had been diagnosed as congenital hypertrophic stenosis were nothing more or less than cases of pyloric spasm without congenital hypertrophy, and that these were the cases which recovered under medical treatment. The spasm was no doubt generally secondary to gastric disturbances. It was now a well-recognized fact that pyloric spasm in adults often resulted from trouble in the appendix, and it was highly probable that it resulted in infants from intestinal as well as gastric irritation. Mr. Stiles said he

was equally convinced that cases of true congenital hypertrophic stenosis were rare; when they did occur the treatment was surgical, and should not be delayed until the infant was almost moribund. The high mortality with which the surgical treatment had been credited was due not so much to the operation itself as to the delay in performing it.

REPLY.

Dr. COUTTS, in replying on the discussion, said that he agreed with Dr. John Thomson, of Edinburgh, in believing that it was quite erroneous to look upon all cases of pyloric stenosis in infants as being curable by medical means. With regard to habit-spasms, such as facial twitching, nothing was more likely to lead to a cure than the discovery and removal of some local source of irritation about the teeth, the ears, or, as Mr. Stephenson had shown, about the eyes. Functional cases sometimes, as time went on, proved to have an organic basis. He agreed that chloretone up to a certain pitch often worked wonders in chorea, but it required very careful watching when the patient became stuporous, and this applied especially to cases in private practice. He had seen erythema frequently in patients taking chloretone. He differed from the view taken by Dr. Lees in treating cases of chorea with massive doses of sodium salicylate and bicarbonate. He did not think this plan safe, and found good results accrue with the same drugs in rheumatic cases, but using much smaller doses. He was convinced that rheumatism was not the only cause of chorea. He had tried limitation of carbohydrate diet in cases of enuresis without any apparent benefit following.

THE SURGERY OF INFANCY.

By JAMES H. NICOLL, M.B., C.M.Glasg.,

Surgeon, Western Infirmary; and to the Royal Hospital for Sick Children, Glasgow.

I DESIRE to bring forward certain views concerning surgical operations in infants and young children, and it may be well, in the first instance, to indicate the basis on which such conclusions as I have arrived at have taken shape.

As influencing my opinions, doubtless the experiences of some twenty years of private surgical practice, and of my wards in the Western Infirmary, have been factors; but I desire to found myself mainly on the out-patient practice of the Glasgow Royal Hospital for Sick Children, in which for some fifteen years I have been in charge of a clinic. During the past ten years (1899 to 1908 inclusive) the work in that clinic has included some 9,000 operations (strictly, 8,988), of which 7,392 have been performed by myself. They have embraced operations for many of the usual affections of childhood, which in a city such as Glasgow naturally include a large proportion of cases of surgical tuberculosis of bones, joints, and glands. Amongst others, however, there have been 610 operations for talipes (tarsectomy, tarsotomy, astragalectomy, and tendon operations); 406 for hare-lip and cleft palate; 36 for spina bifida; 23 for depressed birth fracture of skull; 18 for congenital stenosis of pylorus; 167 for mastoid empyema; 143 for ligature or resection of internal jugular vein in course of radical mastoid operation or excision of cervical glands; and 220 for hernia, inguinal, umbilical, and ovarian (during the past five years only).

As bearing on the conclusions come to, it may be noted (1) that all the 8,988 cases were treated as out-patients after operation, and (2) that nearly one-half of them were children under 3 years of age, a large proportion of them being infants of under a year. Certain series of the cases have been from time to time published as bearing on special subjects, and, in connexion with spina bifida and hydrocephalus, birth fracture of skull, hernia of ovary, pyloric stenosis, ligature of jugular, etc., will be found in the BRITISH MEDICAL JOURNAL, *Annals of Surgery*, *Glasgow Medical Journal*, *Edinburgh Medical Journal*, and other periodicals.

The conclusions to which experience of these cases has led are mainly five; and if I put them in the form of pleas rather than of opinions, it is not that I doubt their soundness, but that I have found adverse criticism not wanting, though less pronounced of late. They are as follows:

I.

That a much larger share of the operative work of a children's hospital than is even now so treated should be done in the out-patient department. In the light of the results obtained at the Glasgow Children's Hospital I have no alternative to the opinion that the treatment of a large number of the cases at present treated indoor constitutes a waste of the resources of a children's hospital or a children's ward. The results obtained in the out-patient department at a tithe of the cost are equally good. Discrimination in the choice of cases for out-patient operative treatment is, of course, necessary. Certain cases are unsuitable. As a rule, the unsuitable cases are found amongst children as opposed to infants. A few instances in illustration must suffice. Osteotomy for rachitic bones, and excision of the knee and hip for tuberculous arthritis are inadmissible as out-patient operations. Both classes of operation belong to childhood, not to infancy. Cleft-palate operations in suckling infants do well as out-patients, but the child of 3 or 4 must go into the wards, where care can be taken to prevent his putting hard edibles into his mouth.

II.

That the cases relegated to the out-patient operating theatre should be largely infants and young children. I express deliberately an opinion which I believe to be well founded when I say that in children under 2 years of age there are few operations indeed which cannot be as advantageously carried out in the out-patient department as in the wards, and that, while the number increases with each year, the increase is not great until the age of 5 is reached. Infants and young children in a ward are noisy, and not infrequently malodorous. The main idea in their admission is the supposed benefit of "trained" nursing. That benefit is largely wasted on them. In the case, for instance, of a child of 18 months after herniotomy or abdominal section, the idea that in hospital he is kept lying quietly on his back largely obtains. Further, if he will not lie quietly he may be fixed on a splint. My experience has been that more often than not he is "all over the bed" directly the nurse's back has been turned on him, and that, if "splinted," his crying and struggling put fresh strain on the sutures. Continuous quiet rest on the back on the part of a young child in pain is a pretty idea, rarely obtainable, and not specially necessary after such operations. After operation in the out-patient room, such young children, with their wounds closed by collodion or rubber plaster, are easily carried home in their mothers' arms, and rest there more quietly, on the whole, than anywhere else. They are visited at home by the hospital sisters and brought back to have the dressing removed at the end of a week or ten days. And I go as far as to say that, with a mother of average intelligence, assisted by advice from the hospital sister, the child fares better than in hospital.

III.

That sucklings and young infants should remain with their mothers after operation. To add to a surgical illness, necessitating operation, the ordeal of weaning is largely to increase the chances of a fatal issue, more particularly in acute cases, in which, to apply the term "weaning" at all to the sudden separation of the child from mother is to largely deprive it of significance. Even when the child is "bottle-fed" separation from the mother is often harmful.

For seven years I have had a small house, near the Glasgow Children's Hospital, for the accommodation of young infants and their mothers. The mothers are catered for, and themselves nurse their infants. My experience of the cases so treated has been such as to make me confident in the opinion that no children's hospital can be considered complete which has not, in the hospital itself or hard by, accommodation for a certain number of nursing mothers whose infants require operation.

The foregoing opinions have reference to the practice of surgery in the cases of children. Working in a children's clinic on the lines indicated, I find that I have gradually formed two further opinions which bear on the practice of surgery in general, and which opinions have been formed by others from other points of view of the subject.

IV.

It has not surprised me to learn of late that many of our leading surgeons in this country and abroad do not prepare the part for operation until the patient is actually under anaesthetics on the table. In a children's out-patient clinic preliminary preparation of the skin is impracticable, and our experience in my clinic at the Glasgow Hospital proves that it is superfluous. If I retain it in my wards in the Western Infirmary it is solely on account of the one advantage it possesses. With all its disadvantages, preliminary preparation of the skin of the part presents the advantage of the saving of time under the anaesthetic, and that advantage is considerably greater in adults than in children. In the adult the surfaces to be cleansed are comparatively large, and, especially in males, require the use of the razor in many parts of the body besides the scalp, and a good deal of time may be necessary. In the child cleansing of the part is very speedily performed.

V.

Experience of herniotomy, abdominal section, and other operations in young children treated as out-patients is gradually reconciling me to the view that we keep similar cases in adults too long in bed, and in my wards in the Western Infirmary we are gradually feeling our way to an average recumbent period of something under a week; how much under we have not yet quite decided.

DISCUSSION.

The PRESIDENT OF THE SECTION (Mr. H. J. Stiles) agreed with Mr. Nicoll on very many points laid down by him, but did not consider it justifiable to treat hernia patients after operations for hernia as out-patients.

Mr. ROBERT CAMPBELL (Belfast) said that he was in entire agreement with Mr. Nicoll as regards operation on children who could be easily carried home by the mother. He was in the habit of operating in the out-patient department on hernia cases.

Dr. J. W. SIMPSON (Edinburgh) said that Mr. Nicoll's statement that after certain operations, if an infant could be treated as an out-patient, it was preferable to treating the same class of case in the hospital, raised the question of the advisability of as far as possible having infants under the care of the mother. Certainly, at least in medical cases in which the feeding was of the first importance, experience proved that, provided the mother was intelligent, it was much better to treat such cases as out-patients. Frequently, when under hospital care, these cases did badly; if sent out and carefully tended by the mother—the same dieting being carried out—they at once put on weight. As the question of feeding must be considered in all cases, he was disposed to agree with Mr. Nicoll that, as far as possible, infants should be treated as out-patients.

Mr. A. FULLERTON (Belfast) said that most of what Mr. Nicoll and the previous speakers had said accorded with his own practice to a large extent, but he drew attention to the medico-legal aspects of the question. Supposing, for instance, he had operated on a case of hernia in the out-patient theatre, and that child died from sepsis or other cause, a little awkwardness might arise with a jury, especially if a medical man called to see the case made the statement that the child ought to have been kept in hospital. With the authority, however, of such well-known surgeons as Mr. Nicoll, Mr. Stiles, and Mr. Campbell, he was sure more work would be done in the out-patient theatre, and he was also sure that the benefit of children's hospitals would be much extended thereby.

Mr. E. SCOTT CARMICHAEL (Edinburgh) said that he had had uniformly good results by following lines similar to what Mr. Nicoll had laid down with regard to operative treatment of infants.

Mr. R. C. DUN (Liverpool) said that on the whole he agreed with the views expressed by Mr. Nicoll.

Mr. ALEX. MACLENNAN (Glasgow) said with reference to radical operations for hernia there was no reason, as far as asepsis was concerned, why an operation done in an out-patient theatre should not be as safe as that done in the in-patient theatre. The risk of movement afterwards was much less than the risk from retching, coughing, or sneezing, all of which were as likely to be a sequence in the one as in the other case. Soiling of the wound at home could be prevented by an impervious dressing, and in any case the child soiled itself as much in a hospital bed as in a bed at home. The operation was so simple as to be practically without risk, and could be advantageously performed from birth onwards.

Mr. G. H. EDINGTON (Glasgow) detailed the after-treatment of operated cases of hernia in infants, and strongly advocated the application of a wet paste consisting of iodoform and carbolic lotion to the operation wound followed by a layer of gauze, which served to abstract the fluid, a dry antiseptic covering resulting. From experience amongst the poor he was certain the child would often have to share the family bed with the parents and other children, even in infectious diseases.

MYXOSARCOMA OF THE PROSTATE IN A CHILD.

By G. H. EDINGTON, M.D., C.M., F.F.P.S.,

Professor of Surgery, Anderson's College Medical School; Assistant Surgeon, Western Infirmary; and Extra Honorary Surgeon, Royal Hospital for Sick Children, Glasgow.

THE case which forms the subject of this communication came under observation only when the trouble was far advanced. It does not, therefore, help much towards the early diagnosis of the condition; but it is an example of what may occur in the late stages of this rare affection of the prostate.

Douglas R., aged 1 year and 9 months, was admitted to the Royal Hospital for Sick Children on March 3rd, 1907, on account of retention of urine of a few days' duration.

History.

The child had been out of sorts for more than a year previously, and four weeks before admission had sustained a greenstick fracture of the right forearm as the result of falling on the hand. At that time the penis was observed to be "inflamed," especially at the foreskin, and he complained of pain on micturition.

About a week to ten days later the urine began to dribble away, the abdomen became swollen, and the patient ceased to be able to walk. One week before admission the left leg became swollen and remained so. Two days later a doctor passed a catheter and drew off a "bowlful" of urine. This was repeated daily, and between the acts of catheterization the urine dribbled away day and night.

Condition on Admission.

The child, who was markedly rachitic, was restless and looked ill. The temperature was 102° F., the pulse 144, the respirations 60 and laboured. There was pain in the lower half of the abdomen, and he was continually putting his hand there and crying.

The abdomen was swollen generally, but markedly in the hypogastrium. Between the umbilicus and the pubes was a mass which on palpation felt firm, more tense than a distended bladder usually is, tender, smooth, and immovable, and dull on percussion. Examination by the rectum showed that the mass occupied the pelvic cavity in front of the bowel. It was firm, resistant, and smooth, and the finger could be swept all round it except anteriorly; it was also tender. There was slight reddening of the glans and foreskin. The left thigh and knee were oedematous.

On March 4th the temperature was 101.2° F., the pulse 140, and the respirations 48. A No. 3 catheter was introduced with difficulty and half an ounce of urine drawn off. The urine was pale, acid in reaction, and of sp. gr. 1012. It contained a distinct amount of blood and albumen, but no sugar. On standing there was a white deposit of pus. The microscope showed many streptococci and some large staphylococci.

On March 5th the general condition was worse and he had taken food badly. The urine was similar to the specimen of the previous day, but alkaline. In the evening he was anaesthetized with chloroform for the purpose of further examination and of operation, if advisable, but he died on the table before anything operative had been done.

Immediately after death a silver catheter was passed, and a quantity of decomposing urine was drawn off. This was followed by disappearance of the *upper* part of the swelling. A mass was, however, still palpable above the pubes and also by the finger in the rectum.

Pathological Report by Dr. Findlay.

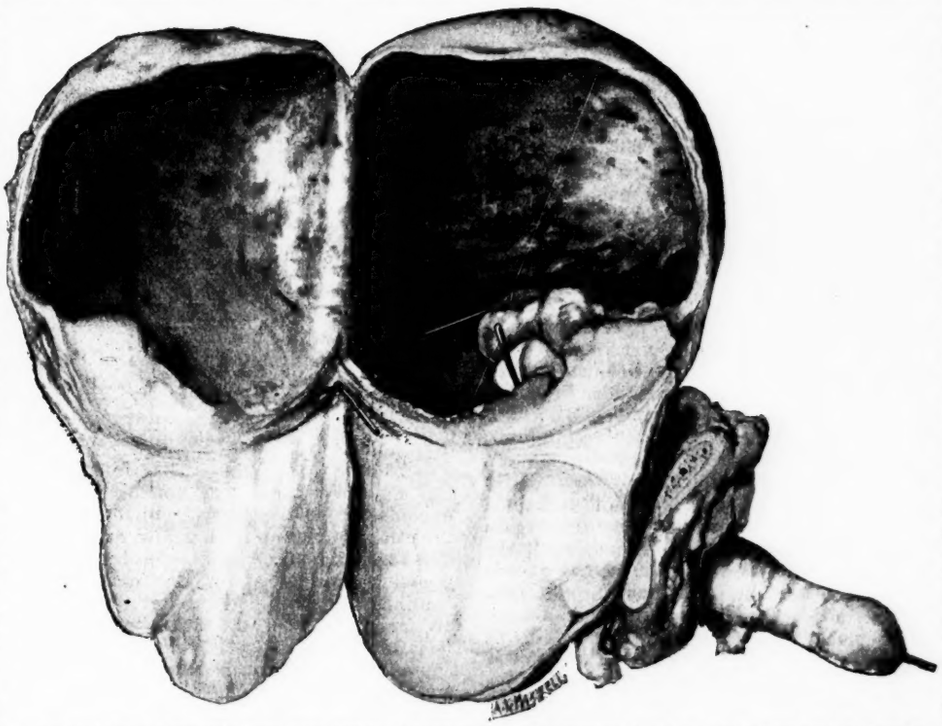
The urinary organs, removed *post mortem*, after having been hardened in formalin, were submitted to Dr. Leonard Findlay for examination.

Situated in the region of the prostate and adherent to the base of the bladder is an ovoid and slightly nodulated and firm tumour mass, which measures in its long axis 2 in., and the same traversely. Extending from this tumour upwards on either side of the bladder is a chain of enlarged and firm lymphatic glands. Both ureters are much dilated.

The kidneys are pale and firm, and show a slight degree of hydronephrosis.

The relationships of the tumour are more clearly demonstrated after making a vertical incision through the bladder and tumour a little to the right of the middle line. (See figure.) It has a pyramidal shape, with the base towards the bladder, and the fresh surface has a pale, myxomatous appearance. The tumour infiltrates the floor of the bladder and sprouts from the trigone and anterior wall as polypi, which completely obscure the urethral and ureteral orifices, which are thus, so to speak, ball-valved. The mucous membrane of the bladder and surface of the polypi are markedly hyperaemic. Both the left ureter and the urethra are patent, though their orifices are covered by the polypi; but the right ureter, as it passes through the bladder wall, is incorporated in the tumour, and completely blocked by new growth. The bladder is dilated, and its wall is hypertrophied.

Histological examination of different portions of the tumour, including the polypoid masses sprouting from the floor of the bladder, reveals a typical sarcoma showing much myxomatous degeneration. For the most part the cells are spindles; but, in addition, there are numerous irregularly rounded cells with occasionally two nuclei. Throughout, muscle-cell nuclei in various states of preservation are here and there visible. At that portion of the bladder wall intervening between the main tumour mass and the polypi the muscle bundles are much split up, separated and atrophied by the infiltration of the sarcomatous tumour growth. Occasionally, remnants of the tubular prostatic ducts are visible. On microscopic examination of the enlarged lymph glands it is found that they are almost entirely replaced by a myxosarcomatous tissue, there being left only a mere shell of adenoid tissue. The kidneys show a fairly marked chronic interstitial cirrhotic change.



The bladder and prostate have been divided by antero-posterior vertical incision, which has passed through lower part of right ureter and shows ureter invaded and obstructed by tumour. Left side of bladder shows polypoid intravesical growths, issuing from between which are probes, the upper from left ureter, the lower from urethra. The sawn surface of the right pubic bone is seen in front of the prostatic mass.

On considering the history of the above case, we find that attention was only directed to the genito-urinary organs at the time when the child met with the accident to the forearm. At that time—four weeks before admission to hospital—it was observed that there was "inflammation" of the foreskin and pain on micturition. The next sign of urinary trouble—namely, dribbling—occurred seven to ten days later, and it was accompanied by swelling of the abdomen. Following this came swelling of the left lower limb, and it was only after this that catheterization was employed and proved the occurrence of retention of urine. Feverishness and malaise ensued.

In children simple balano-posthitis is comparatively common, and it is not to be wondered at that the grave state of matters in the prostate escaped attention. But when dribbling of urine and swelling of the abdomen occur together, the question of retention with overflow incontinence arises, and should lead to examination of the urethra and bladder. (It was not, however, till after swelling of the thigh had occurred that the catheter was passed demonstrating retention of urine.) Next, there is the history of constant *dribbling between the times of catheterization.* This, if true, would point to some implication of the musculature at the neck of the bladder; but it is difficult to believe in the accuracy of this part of the history in face of the occurrence of retention, which rather points to obstruction at the outlet of the bladder. Oedema of the thigh, taken along with retention of urine, would suggest some intrapelvic condition in which obstruction of lymphatics would be due to the agent causing retention. The demonstration of the intrapelvic condition would fall to be made by rectal examination; this, as mentioned above, gave us a tolerably clear explanation of the symptoms.

The size of the mass, as determined by physical examination during life, and by subsequent inspection of the specimen, showed that, even allowing for great rapidity of growth, the tumour must have existed for some time before the symptoms and signs became sufficiently clamant to attract attention. But with the onset of retention, and sepsis following catheterization, there was a speedy change for the worse, and it is questionable if life would have been much prolonged. While the bulk of the tumour might have caused retention, I had no difficulty in passing a catheter, and I believe that the obstruction was mainly, if not entirely, due to ball-valve action of the polypoid intravesical portions of the growth.

The literature is rather scanty. The subject is just mentioned in many of the textbooks on general surgery; while even in books on genito-urinary diseases the descriptions are not very full. The general opinion seems to be that sarcoma of the prostate is rare; but Dr. C. A. Powers, of Denver, in a recent communication,[1] gives over a hundred references. He states, however, that he has only found descriptions of 22 cases, besides his own, in which the nature of the growth was microscopically proved. As the result of his analysis of these 23 cases, he finds that 13 were under the age of 15 years, that the most frequent variety of tumour was the small round-celled (8 cases), myxosarcoma occurring in but 3 cases; and that urinary urgency is not generally present in the early stages.

Bland-Sutton[2] states that "there is rarely any suspicion of trouble until the urethra becomes obstructed." He figures a specimen[3] in which the cause of obstruction was a "bud-like process" of the tumour, which valved the vesical orifice of the urethra. Walsham[4] describes a specimen where the whole of the prostate was occupied by a large soft sarcoma "parts of which project into the cavity of the bladder in the form of pedunculated growths of varying size."

Caspar[5] states that prostatic sarcoma in childhood is "first discovered when retention of urine develops suddenly and without apparent cause. If these little patients be examined a tumour of considerable size will be found."

SUMMARY.

The main points which this case illustrates are (1) the early age of the patient; (2) the short duration of symptoms, which at the beginning were not apparently of serious

import; (3) the large size of the tumour—palpable above the pubes as well as per rectum, when the patient first came under observation; (4) the polypoid growths within the bladder causing retention of urine and partial obstruction of one ureter and the invasion and complete obstruction of the other ureter by the tumour; (5) the infection of the neighbouring lymphatic glands, causing oedema of one thigh; and (6) the comparatively uncommon histological character of the tumour.

When the above points, with the exception of No. 6, are taken along with what one finds in the literature of the subject, it is seen that we have here a typical example of the condition now under consideration.

The case occurred in Mr. R. H. Parry's Clinic at the Royal Hospital for Sick Children, Glasgow, and I wish to record my indebtedness to him for permission to publish the above particulars. I am indebted also to another colleague, Dr. Leonard Findlay, for the care with which he examined and reported upon the specimen.

REFERENCES.

[1] *Transactions of the American Surgical Association*, vol. xxv. Philadelphia, 1907, p. 213 et seq. [2] *Tumours, Innocent and Malignant.* Fourth edition. London, 1906, p. 101. [3] Loc. cit., p. 102. [4] *Handbook of Surgical Pathology.* Third edition. Edited by Herbert J. Paterson. London, 1904, p. 458. [5] *Textbook of Genito-urinary Diseases.* Translated by C. W. Bonney, London, 1906, p. 375.

DISCUSSION.

Mr. D'ARCY POWER drew attention to the remarkable analogy which existed between Dr. Edington's most interesting case of sarcoma of the prostate in a boy and the better known cases of polypoid sarcoma of the vagina and bladder occurring in infant girls. He thought that the specimen opened up a wide question as to the exact origin of polypoid sarcomata of the genito-urinary tract in very young children.

Mr. E. SCOTT CARMICHAEL (Edinburgh) narrated a case under his own care similar to that reported by Dr. Edington; it proved to be a round-celled sarcoma.

Mr. CAMPBELL stated that his colleague Mr. Fullerton and himself had had under their care a boy, aged 4 years, who was affected in a similar way to Dr. Edington's patient. The bladder was opened above the pubes, and a tumour the size of a Tangerine orange was easily enucleated from the prostatic region. The child remained perfectly well for seven months, when retention again occurred. A suprapubic fistula was formed, and the growth was found to have spread widely in the submucous tissue. Eventually the tumour fungated through the opening, and became twice as large as the child's head before death took place many weeks afterwards from septic infection of the ureters and kidneys.

Mr. ANDREW FULLERTON (Belfast) drew attention to a method of examining the interior of the bladder in young children in whom the passage of even a small cystoscope along the urethra was impossible. If a small opening were made into the urethra from the perineum a good-sized cystoscope could be introduced and a good view of the bladder obtained. In the cases described by previous speakers no mention was made of any examination of the interior of the bladder having been made.

The PRESIDENT OF THE SECTION described a case similar to that recorded by Dr. Edington. The tumour and urinary bladder were removed and the ureters transplanted. The child, however, died a few days after operation.

PNEUMOCOCCAL PERITONITIS: A STUDY OF TWENTY CASES.

By E. SCOTT CARMICHAEL, M.B., F.R.C.S.E.,

Assistant Surgeon, Royal Hospital for Sick Children, Edinburgh.

THE apparently increasing frequency with which this condition is observed is shown by the fact that of all cases of general peritonitis treated in a children's hospital from 5 to 10 per cent. are due to pneumococcal infection. This is a percentage in the child evidently larger than in the adult.

The predominance in the female sex is acknowledged by most observers, but in a former communication on this subject, of 11 cases reported, 7 occurred in boys and 4 in girls.

Since that paper was published, 8 cases have been operated upon by Mr. Stiles and myself, of whom 7 were girls; 1 case (a girl) occurring in private practice may be added, giving a total of 20 cases.

The number during the year is, on an average, 4 or 5, and they apparently occur more frequently during the summer months than at any other period.

The source of infection is not always easy to determine, and is still disputed, though in many cases there is a definite pulmonary lesion, but it seems unlikely that any predominance in the female sex is due to infection from the pelvic organs, as the primary lesion in the chest seems to point to secondary peritonitis by a blood or bowel infection.

That this is so seems to be borne out by observations on recent cases. Annand and Bower report altogether 91 cases in literature in children under 15 in 1906, and to these they have added records of 16 others.

The more thorough examination of abdominal fluids leads to these cases being recognized more frequently than formerly. They occur in groups, and are frequently present during epidemics of pneumonia and joint affections. Three of the above cases occurred during one week, and recently I saw two cases on consecutive days.

The cases may be divided into three groups:

1. Those in which a pulmonary condition is predominant and the peritoneum becomes affected later.
2. Those in which a pulmonary condition is clinically absent and general peritonitis the only manifestation.
3. Those in which there is pneumococcal septicaemia, usually rapidly fatal.

MODE OF INFECTION.

I think the mode of infection may be through one of three channels.

1. By spread from the uterus and Fallopian tubes.
2. By blood infection or by transmission through the diaphragm.
3. By ingestion and direct transmission through the diaphragm.

It is difficult to believe that infection occurs by way of the Fallopian tube. In none of these cases was there evidence of local vaginitis, which one would expect if the infection spread up from below, as an analogous condition due to the gonococcus is associated with definite gonococcal vaginitis. Again, this condition is by no means confined to the female sex, as 8 out of the 21 cases occurred in boys. In 6 of the cases there was a definite lesion in the lungs, so that the genital organs were not the source of infection in them. No definite pathological support has been adduced to this view.

Blood infection would appear to be more probable in these cases, as considerable clinical and experimental evidence has been brought forward to show the presence of pneumococci in the blood. Thus, Ewing has grown pneumococci from the blood in every case of pneumonia. This fact might at first sight seem to favour the blood infection theory, but if the peritoneum and other serous membranes are liable to blood infection, one would expect it to occur much more frequently in a condition in which the blood always contains pneumococci, so that this observation of Ewing's seems to be rather opposed to a blood infection. Again, if the peritoneum were infected by the blood stream, one would expect joint and other complications to be more frequent in pneumonia.

A study of the present series of cases seems to me very much rather to favour direct peritoneal infection from the intestinal tract.

We have experimental evidence in favour of this in that Jensen has fed rabbits and mice on pneumococci and produced fatal peritonitis, the intestine being injected and the lymphoid tissue markedly congested. Some of the most distinctive symptoms of the disease are those referable to gastro-enteritis.

If we consider the last 9 in the above series of cases 8 have been girls, whereas, as previously pointed out, in the first series the male sex predominated. Again, of these 9, 7 occurred between the ages of 5 and 7, during the period of second dentition.

GASTRO-INTESTINAL SYMPTOMS.

Vomiting was present in all these cases, generally coming on suddenly. In some cases there was severe retching, simulating severe gastritis. In 1 case where this symptom was markedly present, coming on after eating bananas, the child died in thirty-six hours of pneumococcal septicaemia; pneumococcal peritonitis was present, and the toxaemia was so severe that the patient died before clinical symptoms of peritonitis became obvious.

Diarrhoea was severe in 2 cases and slight in 1; this symptom is said to be more frequently present.

PATHOLOGICAL CHANGES IN ABDOMEN.

The symptoms resemble those of acute general peritonitis following acute appendicitis, and are often indistinguishable therefrom, except that the pain is not infrequently most severe on the left side. Under an anaesthetic the probable nature of the condition is to be suspected in the absence of any swelling or thickening in the appendix region, so that in persons under puberty with general peritonitis, with acute symptoms and marked gastro-intestinal disturbances, the infection in 90 per cent. will probably be pneumococcal if the appendix is excluded. I have had 2 cases of primary streptococcal peritonitis during the same period as these 20 cases, and 1 case of mixed coli and leptothrix peritonitis.

On opening the abdomen the diagnosis can be surmised by two characteristics—the entire want of odour of the fluid in the peritoneal cavity and the characters of the fluid. The want of odour is characteristic in all cases, but the appearance of the fluid varies considerably.

If we take the most acute condition, as seen in cases of septicaemia with death within forty-eight hours, the fluid is thin and watery, often rather sticky, and microscopically contains a large number of pneumococci.

Later it becomes more straw-green in colour, or even brownish and thick, resembling in one case cream or fluid seen in a pneumococcal empyema. In the earlier cases there are often flakes of lymph in the fluid.

The pus, when thick and creamy, is generally very copious, filling the abdomen like a marked ascites.

We have had two cases of encysted pneumococcal abscess in which the pus was almost indistinguishable from the tuberculous abscess of tabes mesenterica. It is generally due to a mild infection, and the child, when seen, is emaciated, resembling one suffering from tuberculous peritonitis.

PULMONARY AFFECTIONS.

Pulmonary disease was present in 6 cases; in 4 cases it preceded the peritonitis, and in 2 followed (pneumonia and empyema). Cases associated with lung disease run a more favourable course; 5 out of the 6 recovered, and the one that died was an example of septicaemia with pleural and pericardial effusion and commencing pneumonia.

The diagnosis between pneumonia and early pneumococcal peritonitis is in some cases not easy, and I am not at all sure that there is not a mild pneumococcal peritonitis in a considerable percentage of lung affections.

PROGNOSIS.

This is grave. Of the 20 cases above recorded 7 died, giving a mortality of 35 per cent. Of the deaths 2 occurred in patients with acute pneumococcal septicaemia; in 4 there was apparently primarily pneumococcal peritonitis, but no definite lung lesion was to be found; 1 had definite early pneumonia.

Of the remaining 13 cases which survived, there was definite pulmonary lesion in 5, so that the presence of pneumonia or pleurisy in these cases would seem to justify a more favourable prognosis.

TREATMENT.

This has, especially in the recent cases, been carried out according to the teachings of Murphy, and the more I see of his method the more am I inclined to interfere as little as possible after getting free drainage.

DISCUSSION.

Mr. D'ARCY POWER congratulated Mr. Carmichael on his communication, and stated that his own cases substantiated the conclusions at which he had arrived. As the result of a routine bacteriological examination in all cases of acute inflammation, the general term of "tuberculous disease" was becoming classified into its proper forms of pneumococcal, streptococcal, staphylococcal, etc., with appropriate subsequent treatment.

Mr. ROBERT CAMPBELL (Belfast) said that he was interested to hear that Mr. Carmichael did not consider that there was much in favour of the vaginal route of infection. Mr. Campbell had had one case in which the peritonitis was confined to the sac of a left inguinal hernia, but there was no other evidence that the infection had taken place by the vagina.

EARLY RADICAL OPERATION IN EXOMPHALOS.

By MAYNARD SMITH, M.B., B.S.Lond., F.R.C.S.,
Surgeon to Out-patients, St. Mary's Hospital; Senior Assistant Surgeon, Victoria Hospital for Children.

MANY names have been applied to this congenital malformation. It is perhaps most frequently known as "congenital hernia of the umbilical cord," a name which gives a somewhat false idea of its etiology. The condition is, in fact, one of ectopia rather than hernia, the viscera contained in the ventral protrusion never becoming included in the abdominal cavity, but remaining outside that cavity owing to the failure of the abdominal wall to meet and fuse in the ventral median line. That it is a rare condition may be inferred from the figures given by various writers. Thus, W. B. Coley records that it was seen 4 times only in 75,000 cases of hernia.*

At the end of the second month of fetal life the intestines are not enclosed within the abdominal walls. During the third month of fetal life the intestines gradually recede within the abdominal cavity, and the plates of the abdominal walls close over them; this fusion should be complete by the end of the third month, and the umbilicus is closed in the sense that it no longer gives passage to viscera. This process of closure of the abdominal walls anteriorly may be interrupted at any stage, and according to the period at which the interruption takes place different degrees of malformation are met with.

The following classification has been suggested, and, though artificial, it is useful for descriptive purposes:

1. There is a well-formed umbilical cord, which is noticed, however, to be unduly thick at its abdominal termination. This thickening is due to the fact that there is a prolongation of the peritoneal cavity into the cord for an inch or so, and into this sac protrudes a coil of small intestine, or in some cases a Meckel's diverticulum. In the latter event the diverticulum may be adherent to the interior of the apex of the sac, but, apart from this complication, the sac contents are, as a rule, readily reducible. This variety may easily be overlooked; when the cord is tied the knuckle of bowel may be included in the ligature, and perforation result, leading to peritonitis; in a few cases adhesions may form in time to shut off the peritoneal cavity, and a faecal fistula develops.

2. There is a moderate-sized protrusion of a sacculated nature at the navel. The cord arises from the summit of the hernia, usually somewhat below the centre, and not infrequently to the right or left side of the middle line. Such a sac contains, as a rule, intestine only, the lower ileum most often, but in many cases the caecum also, these being the last portions of the alimentary canal to recede into the abdominal cavity in the process of development. It has long been known, however, that other viscera may be found in the sac. The liver is that most frequently met with after the intestine. Macready gives the following figures:

In 47 cases—Intestine alone, 28
Liver and intestine, 9
Liver alone, 10.

The spleen (P. Mouton), left kidney, and part of uterus (Jacobus), and the stomach have also been recorded as being present in congenital umbilical herniae.

3. In this variety the pedunculated sac described above does not exist, but there is absence of a greater or lesser portion of the abdominal wall, which is replaced by a transparent membrane. This condition is known as

* These are hospital statistics, and are affected by the fact that many cases are born dead or die without admission to hospital.

ectopia viscerum, or eventration. Sometimes the cleft extends from the ensiform to the pubes, sometimes it is more limited in extent. Sometimes it is mesially placed, sometimes the deficiency is to one or other side of the middle line. The cord is attached, as a rule, somewhere on the surface of the transparent membrane; but at times it has completely failed to develop, the placenta itself forming part of the structures which are completing the abdominal cavity in front. It will be clear that in many cases this condition must be incompatible with life. Rupture of the sac may take place either before or during delivery. Defects in the development of the intestines, particularly of the large bowel, are found in many of these cases, whilst associated deformities, such as hare-lip, spina bifida, imperforate anus, and club-foot, are also met with. George Sultan draws a distinction between this congenital hernia of the umbilical cord and congenital clefts in the abdominal wall which are above the umbilicus. The cord in the latter instance is displaced downwards, but is normal throughout, right up to its attachment to the abdominal wall, which is at a point immediately below the lower limits of the cleft.

The sac is composed of a transparent membranous layer, sufficiently thin, as a rule, to allow the enclosed viscera to be seen readily. Sometimes the sac is thicker, and includes a considerable mass of tissue identical with Wharton's jelly. Three layers may be recognized—an outer or amniotic layer, an inner composed of a membrane smooth and polished on its internal aspect, and continuous with the peritoneum. Between these two is a third intermediate layer of sparse connective tissue—the textus tendinosus of Soemmering. Macready notes that there is occasionally a collection of serum between these layers. There is a sharp line of demarcation between the edge of the normal skin and the membranous sac, the junction being, as a rule, a short distance above the level of the abdominal wall.

Prognosis.

The outlook, both as regards life and the possibility of cure, is, of course, immediately dependent upon the size of the sac. First, it must be recognized that spontaneous cure in the less marked cases is possible. Simon Duplay describes this process in detail. The external layers separate, the method of separation being identical with that of the stump of the normal umbilical cord, the time taken for the process to become complete being but little longer. The exposed surface of the inner layer now becomes red, vascular, and covered by granulations; gradual shrinking ensues with the organization of fibrous tissue, and the contents of the sac are thus reduced within the abdominal cavity. In one case mentioned by the same writer, spontaneous cure was complete after thirty-seven days in a case in which a part of the liver was present in the sac. Whilst admitting the possibility of spontaneous cure, it must be pointed out that when left alone the usual result is death. A fair number of cases have been operated on; the first recorded is that mentioned by Ambroise Paré, who states that a contemporary of his opened one of these herniae "croyant avoir affaire à une tumeur humorale."

Treatment.

The following are the possible methods of treatment: (1) Ligature of the cord sufficiently far from the abdominal wall to ensure that no sac contents are included, and dressing aseptically in anticipation of spontaneous cure. (2) Ligature of the neck of the sac after reducing contents. (3) Percutaneous ligation (Breus); the contents of the sac are reduced and transfixing ligatures are applied. (4) Extra-peritoneal operation (Olshausen). An incision is made through the skin close to its junction with the translucent sac wall; the outer layer of the sac wall is then dissected off from the peritoneal layer, the peritoneal cavity not being opened. The big vessels are ligatured and sutures inserted to bring the layers of the abdominal wall together over the folded sac. (5) Radical operation; the whole sac, including the peritoneal layer and a small area of surrounding skin, is cut away and the abdominal wall closed in layers.

Hausson quotes the following figures in 73 cases:

Method 1	...	...	6 deaths in 11 cases.
,, 2	...	...	0 ,, 2 ,,
,, 3	...	...	1 death in 5 ,,
,, 4	...	...	0 deaths in 5 ,,
,, 5	...	...	17 ,, 50 ,,

It must be remembered that the first three methods are only applicable with any fair prospect of success in the very slight cases, those described as Class 1. In the more severe types some form of operation (either the fourth or fifth methods) is called for, and the following figures, quoted from W. B. Coley, show that the results of operations are distinctly hopeful:

Macdonald, 1890, 31 cases—12 treated with bandage and compression, 9 deaths; 12 treated by operation, 2 deaths.
Lindfors, 1893, 32 cases treated by operation, 6 deaths.
Adler, 72 laparotomies up to 1904 and 22 since that date. Of the 94, 65 were cured and 29 died within a few days of operation.

Report of Case.

A female infant, the subject of exomphalos, sent to hospital by Dr. Sturge of Paddington, came under my care on September 11th, 1907. There was a large hernia projecting from the region of the navel of the size of a large orange. The sac was composed of a semitranslucent layer sufficiently thick to prevent the contents from being seen. The projection was sessile, and there was no sort of neck to the sac. The child was small and thin, but no other deformity was present. I operated immediately—eight hours after the child's birth. An oval incision enclosing the sac was made through the healthy skin which bordered it. The peritoneal cavity having been opened, the sac was found to contain a considerable part of the liver, the gall bladder, and many coils of small intestine; the sac was intimately adherent to the anterior surface of the liver, and much difficulty was experienced in separation. The hypogastric arteries were caught and ligatured where they left the abdominal wall and the umbilical vein close to the margin of the liver. The raw surface of the liver oozed freely, but this was controlled by hot saline solution. The viscera were then returned and the abdominal wall closed by two tiers of stitches. The child made an uneventful recovery, and left the hospital apparently well on October 7th.

On the 14th, however, she was readmitted for vomiting. The vomiting continued at intervals, and difficulty was experienced in getting the bowels to act. On October 28th acute intestinal obstruction developed, and the infant died on October 30th.

At the necropsy the right lobe of the liver was comparatively normal in size and shape, the left lobe was small, and from the anterior border of the liver at the junction of the lobes a mass of liver substance, the size of a walnut, projected downwards into the abdominal cavity, and was adherent to the abdominal wall by its anterior surface; the adhesions were band-like and were only broken down with difficulty, showing advanced organization. The projecting mass of liver substance was ovoid in shape, had a smooth surface, except where adhesions had formed, and appeared in every respect to consist of normal liver tissue. The mass was connected with the liver by a flat band of liver tissue, the bulk of which was continuous with the left lobe, but a small portion extended into the right lobe. The gall bladder was on the posterior surface of the band just described. The main mass of the liver was normal in every way, and had normal attachments and relations. Ten inches from the ileo-caecal valve three coils of small intestine were bound down in adhesions between the abdominal wall and the liver projection. These coils were small and flattened, and were almost completely obstructed. There were no other deformities.

A condition of the liver similar to that met with in this case has been recorded by J. G. Schaeffer. In his case the greater part of the liver lay outside the abdomen, and a small spherical, pear-shaped part inside. Berthelot mentions a case in which only the Spigelian lobe remained behind. Marriques has seen the whole liver outside the abdomen, and when this is the case the coronary ligaments are absent.

I record this case since it shows that even where the deformity is of extreme degree, and where there is no neck to the sac, operation still holds out a reasonable chance of success.

THE ASSOCIATION OF A PATENT FUNICULAR PROCESS WITH CERTAIN FORMS OF HYDROCELE.

By R. C. DUN, F.R.C.S.,
Surgeon, Children's Infirmary, Liverpool.

SMALL hydroceles of the tunica vaginalis testis are very commonly met with in children, and are readily cured by tapping alone, or by tapping followed by injection. In my experience this simple form of treatment is much less successful in those larger hydroceles which extend from the testicle to the external abdominal ring, or into the inguinal canal, and the same holds for encysted hydroceles of the cord. It was upon this account that I first began to operate upon such cases.

As a result of the examination of the hydrocele sacs

removed, I have found some explanation of the failure to cure by tapping and injection. A majority of the hydrocele sacs were found to be loculated; this would naturally prevent the free emptying of the fluid by tapping, and make it difficult for the injection to reach the whole of the wall.

The main point of interest, however, lies in the fact that in almost all cases I found a patent funicular process present above the hydrocele sac, although from the history and clinical examination of all the cases referrred to in this paper there was nothing to lead one to suspect the presence of a hernia.

I have now operated upon 37 cases of hydrocele, in none of which was there any evidence of hernia before operation, and in 35 of them—that is, all but 2—a patent funicular process was found above the hydrocele. The number of cases is not large, but the proportion in which a hernial sac was found is striking.

As a result of these observations, I am now inclined to advise operation in such cases, because the ordinary simple methods of treating such hydroceles have not been successful in my hands and because by operation the hydrocele can be cured with certainty, while at the same time the hernial sac, which I have found to be the common accompaniment of this condition, can be removed.

The operation itself is simple. The hydrocele sac is reached through an incision similar to that employed in the operation for inguinal hernia. I have always found that the coverings, vas, and vessels can be easily separated from the hydrocele sac, the lower part of which is then cut through, a portion being left to form a tunica vaginalis testis.

When the upper part of the hydrocele sac is exposed there is no difficulty in recognizing the patent funicular process lying in close relation to it. The operation is completed by freeing the hernial sac from its coverings as high up as the internal abdominal ring, where it is ligatured and the distal part cut off. Owing to the shortness of the inguinal canal in children, no division of the external oblique muscle is necessary. A single catgut stitch through the inguinal canal completes the radical cure.

I have had no anxiety with any of my cases. There is no shock, provided the children are kept warm and the vas is not pulled upon. I have had no trouble with haemorrhage either during or after the operation. In all cases the after-treatment has been by the open method without the application of any dressing—a method which was first suggested by Mr. Stiles, and which I have found in every way satisfactory. All my cases healed by primary union, and ten of the children operated upon were under 12 months old.

In my opinion, a very suitable age for operating is between the third and sixth month. These babies, as soon as the stitches are taken out on the eighth day, can be lifted up and carried about, and require no further treatment of any kind.

I keep older children lying down in bed for a fortnight, after which time no truss or bandage need be worn.

REPORT OF A CASE OF MADELUNG'S DEFORMITY.

By ALEX. MACLENNAN, M.B., C.M.,

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ACCORDING to Stetten,[1] Madelung ought to have the honour of having his name associated with this deformity of the wrist, because he was the first to recognize it as a distinct entity and to describe it adequately. Some confusion, however, still exists as to the class of case which may legitimately be included under the designation "Madelung's deformity." Thus, complete or partial, traumatic or pathological separation of the lower epiphysis of the radius, dislocation of the lower end of the ulna, rheumatoid arthritis, congenital malformations, etc., occasionally give rise to lesions identical in appearance if not in origin. The following represents a typical case:

K. M., aged 13, was seen in 1906. She was a healthy, well-developed girl, and resided in the country. The deformity, which affected both wrists almost equally, had been first noticed three months previously, and had gradually progressed. It was quite unassociated with any stress or strain. The deformity was unknown in the family. It had not led to any functional disturbance, only a slight degree of aching in the joint being complained of after any extra work. The general appearance of the wrists is illustrated in Fig. 1.

The displacement of the hand was forwards, and in repose one of valgus (hence the synonym, *Manus valga*, sometimes applied to the condition). The hands were normal. The lower end of the ulna was prominent, and was situated over the cuneiform. The lower end of the ulna had therefore ceased to be in articulation with the radius. This displacement of the ulna caused a certain amount of rotation of the hand in the direction of supination. The radius was not curved in the antero-posterior plane; its lower end bulged backwards and formed the prominent boss seen in the figure. Active movements in all directions were quite free and normal in range, for the diminution in extension at the wrist was balanced by increased flexion. Passive movements were normal. The deformity was practically irreducible. Both forearms were comparatively shortened. The distance from the acromion process to the external epicondyle was 11¾ in., and the ulna measured, from the tip of the olecranon process to the styloid, 8 in. With the elbows flexed the disparity between fore and upper arms was very evident; it indicated interference with growth at the wrists. There were no signs of rickets, and the joints were not tender to pressure. The *x*-ray plate was instructive. The ulna did not show anything special unless a little prominence of the interosseous ridge which corresponded to a similar appearance in the radius, possibly due to tension in the interosseus membrane the result of the increased outward curvature of the radius. The radius appeared rough, stumpy, and excessively curved in an outward direction. The chief interest, however, lay in the lower end. An epiphyseal line was visible only in the outer two-thirds, the inner third was absent, and that part apposed to the diaphysis in this situation showed a somewhat hazy and indefinite structure. Into this rarified part of the radius projected the semilunar, while the downward-pushed scaphoid was rotated in its transverse axis, and gave in the plate an appearance similar to that often found in fracture of the scaphoid; on this account the radial styloid came into relationship with the trapezium. The pisiform and cuneiform were not displaced relatively to the other carpal bones.

It was obvious that for some reason the inner third of the metaphysis had disappeared, and no addition of growth was taking place to the corresponding section of the radius. The lower articular surface looked directly downwards, there being no antero-posterior curvature of the radius.

The explanation of the deformity lay in this failure of the inner third of the epiphyseal line. The radius, being only added to in its outer two thirds, of necessity began a wheeling movement having its inner side as centre. The hand being attached to the radius followed suit; hence the valgus deformity. The curving of the radius, added to the obliquity of its lower articular surface, also contributed to the shortening. No interference was taking place with regular growth at the lower ulnar epiphysis, so the ulna had to part company with the radius and its solidly attached carpal bones.

Operation.

Having accepted the view given that the deformity was entirely due to irregular growth at the lower radial epiphysis, it was decided to perform a cuneiform osteotomy, the metaphysis to be included in the wedge removed. This was done in 1906. The forearms were put up in plaster-of-Paris for six weeks subsequently. It was understood and explained to those responsible for the child that the ulna, continuing to grow as it would, might necessitate interference with its growing line. This ultimately proved to be advisable, but on account of the result having given complete satisfaction further operation was not sanctioned. Fig. 2 shows the result one year later. A letter was received two months ago stating that the girl was in service, and that the wrists did not trouble her at all.

The etiology of the condition has given rise to much speculation. It is probable that various causes at least contribute to the deformity. Relaxation of the capsule, unbalanced muscular action, inflammation (rarifying osteitis) need only be mentioned to be dismissed. The essential factor in the distortion is the irregularity in growth at the lower end of the radius. Whatever interferes with growth at an epiphysis must be considered in the etiology of this malady.

1. *Trauma.*—It is an undoubted fact that an entire metaphysis, or part of it, may be destroyed by separation of the epiphysis. The usual situation of the separation of an epiphysis from the diaphysis takes place on the diaphyseal side of the growing line, and no harm results. Quite otherwise is it when the line of separation is actually through the growing cells, which are thereby destroyed, with resultant inhibition of growth. If the separation is partly on the epiphyseal side and partly on the diaphyseal side, that part which is obliterated does not grow, while the other continues to add length to the shaft, which of

necessity must become distorted. Separation of the epiphysis may thus give rise to distortion at the wrist, but as a cause of Madelung's deformity it may be ruled out on the definition that the malady must be spontaneous. Before dismissing trauma as exemplified in separation of the epiphysis, it must be pointed out that the deformity usually then present is identical with that found in Colles's fracture—the reverse of the present case, and also that it is unusual to find trauma affecting both sides simultaneously in such an occult way.

2. *Rickets.*—As the cause of the deformity in this case, rickets, were it or had it been present, would explain all the anatomical features, but signs or history of it were absent in this as in most cases reported. It might be pointed out that were rickets and this deformity etiologically connected, it would be commonly observed in Glasgow, where rickets is prevalent. The case here recorded did not reside in the city, but in a neighbouring country town. A type of deformity of the wrists is found in rickets, as reported by Kirmisson[2] and Stetten,[3] not altogether unlike the reverse of Madelung's. It consists in a forward and inward curving of the radius (often associated with or complicating fracture) due to the fact that the rickety child distributes the pressure on its limbs and crawls on the floor. The forearms thus become bent by pressure, and cubitus valgus is noted at the elbows. This condition, however, is not Madelung's deformity. It is hardly conceivable that a system disease like rickets could so localize and concentrate itself as to affect merely one section of one epiphysis. It is true that to explain a number of the deformities affecting the lower limbs, such as genu valgum and varum, a condition has been presumed to be established by rickets, whereby its effects have been delayed; but this is supposition only, and that such a thing as late rickets exists is questionable.

Fig. 1.—Madelung's subluxation of wrists in a girl aged 13 (before operation).

Fig. 2.—The same after removal of a wedge containing radial metaphysis.

1. Without entering into the cause of these deformities, it may be noted that they take place under the strain from the superimposed weight of the body, while in Madelung's malady no such factor exists. The finding of exostoses about the metaphysis, on which much stress has been laid as pointing to a rickety origin of the deformity, only implies irregularity of growth at the epiphyseal line.

2. The presence of a curve in the radius lends further support to the view that rickets is the cause of the deformity, but the presence of the curve has already been referred to. Such curvature is not the result of pressure on a softened bone, and to name the disease "radius curvus" seems to me to miss the whole point in the etiology. Further, such a curvature is not present by any means in all. It is secondary, not primary. It is capable of distorting the joint, but it is quite against all experience that the shaft of a bone not only free from all pressure, but actually under extension, should curve. This curve seems so essential to the radius that it necessitates splitting of partnership with the ulna. It is therefore obvious that the bending of the radius is due to the manner in which it is growing from the metaphysis. The radius may thus grow in any direction. Rickets and curvature of the radius can only be accepted as etiological factors in so far as they affect the metaphysis. If, then, the origin of the deformity be in the metaphysis, it is probable that those cases reported as congenital were really so. In support of the acceptance of the congenital cases the following instance of a deformity present at birth which affected the ankle might be reported.

The right foot of a child, aged 11 years, was alone involved. The left foot was inclined to be flat. The right foot tended in the direction of talipes varus. The external malleolus was very prominent, large, and was noted to descend further on the foot than the corresponding process in the left foot. It was considered that the right fibula had grown or was growing more than the tibia. The skiagram corroborated this view. The condition was noted at birth, and had not become much worse. It only gave rise to a feeling of tiredness after a long walk.

This was probably a case analogous to the Madelung deformity, but which implicated the ankle. There is no reason why the metaphysis should not be affected before birth. Further, it might conceivably be that the development of the metaphysis was incomplete, as has been suggested by Pels-Leusden.[4] This would account for the hereditary element which enters so largely into these cases, and which is a much more evident factor than either trauma or rickets. With such a view the symmetry and the spontaneity of the distortion are intelligible. It may be pointed out that such a supposition would not account for the delay in the deformity till middle childhood with more or less sudden development in the course of a few months, but it must be remembered that in these cases growth has been delayed, and the rapid onset of the distortion would correspond to the period of rapid growth. In infantile paralysis bony growth is interfered with to a considerable extent, and it is enticing to resort to this explanation to account for this somewhat mysterious disease. Such a theory is reasonable, even though there may be no period when an infantile paralysis is present, for we know that the slighter degrees of paralytic talipes develop apparently spontaneously.

CONCLUSIONS.

1. Madelung's subluxation is not a true subluxation, but is a distortion of the joint.

2. It is due to irregularity of growth at the lower radial epiphysis (as also enunciated by Ewald[5] and Franke[6]).

3. The radius is curved, either outwards and backwards, or forwards and inwards (2 cases), according to the nature of the irregularity at the metaphysis, giving rise respectively to a forward or backward displacement of the hand.

4. It affects both wrists in about 70 per cent.

5. It occurs most commonly in females (about 85 per cent.) during the period of most active growth.

6. The deformity is occasionally present at birth.

7. The irregularity at the epiphysis may be due to a variety of causes, such as trauma, rickets, disease of the central nervous system, etc. Such lesions may occur during intrauterine life.

8. The malady is very frequently inherited and may be associated with other deformities.

9. Secondary changes occur in the various structures at the wrist after the disease has been present for a long time.

10. The correct treatment is cuneiform osteotomy when the deformity is fully developed and the epiphyseal line may with advantage be included. The ulnar metaphysis should be destroyed. The slighter cases which could be righted by a simple osteotomy do not require operative treatment at all.

REFERENCES.

[1] Stetten, *Surgery, Gynaecology, and Obstetrics*, January, 1909. (The article contains a full list of references with review of the literature.) [2] Kirmisson, from Stetten. [3] Stetten, l.c. [4] Pels-Leusden, *Deut. med Woch.*, 1907, No. 10. [5] Ewald, *Archiv. f. klin. Chirurg.*, Bd. 84, heft 4. *Zeitsch. f. orthopäd. Chirurg.*, Bd. 23. [6] Franke, *Deut. Zeitsch. f. Chirurg.*, 1908, Bd. No. 92; see Levy, *Berl. klin. Woch.*, 1908, No. 50 (this case had rickets).

TWO CASES OF MEDIAN HARE-LIP.

By R. C. DUN, F.R.C.S.Eng.,
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CASE I.

A GIRL, 1 year and 1 month, was the subject of the following congenital deformity:

The upper lip is cleft exactly in the middle line. The cleft is narrow, and extends upwards to a point a quarter of an inch above the free margin of the alveolar process. At this level the mucous membrane covering the edges of the cleft is reflected on to the upper jaw, forming a distinct frenum. A deep groove is continued upwards in the middle line from the apex of the cleft through the upper portion of the lip, the nasal septum and the tip of the nose

Fig. 1.

to end on the dorsum. This extension of the groove beyond the point of the nose gives rise to a bifid appearance of the organ at its lower part. The labial part of the sulcus is lined with mucous membrane; the nasal portion has a normal skin covering.

The anterior nares are small and widely separated, owing to the abnormal width (half an inch) of the intervening portion of the nasal septum. The bridge of the nose is broad and flattened. The anterior borders of the nasal bones can be distinctly felt, separated from each other by an interval of half an inch at their lowest points. The eyes are wide apart; the distance between the inner canthi measures 1¼ in. The incisor teeth are perfectly developed and regularly placed. There is no indication of any alveolar cleft. The palate is fully developed but somewhat highly arched.

I am indebted to Dr. Hubert Armstrong for the photograph of this case.

CASE II.

A female infant, 7 weeks old, showed a deformity of the

Fig. 2.

upper lip, in many respects similar to the previous case (Fig. 2).

The cleft in the lip was mesially placed. The extent of the deficiency was only ¼ in., and a shallow sulcus was continued upwards from the apex of the cleft to the tip of the nose.

The alveolar process of the upper jaw showed a narrow cleft exactly in the middle line, which was continued backwards through the hard and soft palates.

A well-marked frenum passed from the posterior surface of the lip to the edges of the alveolar cleft.

Both these children were otherwise normally developed, and in neither case was there a family history of congenital deformities. Other children of the same parents were normal.

DISCUSSION.

Mr. A. MACLENNAN (Glasgow) said that the cases of median hare-lip described were examples of true hare-lip—that is, a failure in union between the two globular processes of the fronto-nasal process. The cases usually reported of failure in this region had shown very extensive defects involving the whole upper part of the face, the brain, etc. As a usual result of union of the lobular processes, there was a slight elevation down the columella of the upper lip, and these cases were therefore the reverse of the natural condition. The usual median hare-lip described was a hare-lip by defect of the whole fronto-nasal process, and was often associated with a protuberance of the misplaced fronto-nasal process in front of the nose.

ABDOMINAL TUBERCULOSIS IN YOUNG CHILDREN:

ITS PREVALENCE, PROPHYLAXIS, AND PROGNOSIS WITH AN ANALYSIS OF 137 CASES.

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IN a book on *Tuberculosis in Infancy and Childhood*, edited by Kelynack of London, and published in 1908, Dr. John Thomson and I published a paper on the prevalence of abdominal and meningeal tuberculosis, from which the following tables (Tables I and II) are taken, and in which they are partly summarized as follows:

Thus we find from Table I that, while of 67,489 children treated in hospitals in England and Scotland (elsewhere than in Edinburgh and Glasgow) the percentage amount of abdominal tuberculosis was 1.6, of 68,498 children similarly treated in various Continental countries it was 1.13; and of 37,129 American children's hospital patients it was only 0.28; yet among 23,939 children treated in Edinburgh and Glasgow the percentage was no less than 3.9. In no other centre or centres do the figures even approach those of Edinburgh and Glasgow, the nearest being those from Buda-Pesth, which show a percentage of 2.0 in 27,173 children.

TABLE I.—*Indicating Frequency of Abdominal Tuberculosis in British Children's Hospitals.*

Locality and Name of Hospital.	Period in Years.	Total Number of In-patients.	Percentage of Cases of Abdominal Tuberculosis.
London: Hospital for Sick Children, Great Ormond Street, W.C.	10	22,896	1.8
London: North-Eastern Hospital for Children, Hackney Road, E.	10	10,533	1.3
Birmingham: Free Hospital for Sick Children	10	9,486	1.5
Sheffield: Children's Hospital	10	3,400	1.3
Manchester: Children's Hospital, Pendlebury	9	15,795	2.0
Edinburgh: Royal Hospital for Sick Children	10	15,320	3.6
Glasgow: Royal Hospital for Sick Children	10	8,619	4.6
Aberdeen: Royal Hospital for Sick Children	8	5,379	1.2

The value of the comparison of hospital statistics in such an instance is admittedly limited, in that appreciation of the condition as a clinical entity varies in different centres, the readiness of its diagnosis and the advisability or otherwise of hospital treatment vary according to the mental attitude of the clinical observer, while the available space in a hospital and the area from which it draws its

cases must determine very markedly its possible admissions. These tables serve, however, to show that the condition is in this country no rarity, and that in the Edinburgh district it is common.

From the scientific and pathological standpoint it may be contended that the condition in a pure form is rare, and undoubtedly this is so. Tuberculous infection of the bronchial glands is a frequent concomitant condition, and general tuberculosis or tuberculous meningitis not infrequently dominates the situation in the later stages. But clinically, abdominal tuberculosis—tuberculosis of the mesenteric glands, tuberculous peritonitis, tuberculous ascites—is a definite entity, and there is, as Coutts (Kelynack: *Tuberculosis in Infancy and Childhood*) states, "a very definite class of case in which the abdominal disease—clinically, at least—is the primary and conspicuous one." It is with well-marked examples of this class of case that I propose to deal, and in so doing I appreciate to the full the certainty that thereby I exclude from my statistics numerous undiagnosed cases exhibiting negative physical signs or minor symptoms only.

TABLE II.—*Indicating Frequency of Abdominal Tuberculosis in European and American Children's Hospitals.*

Locality and Name of Hospital.	Period in Years.	Total Number of In-patients.	Percentage of Cases of Abdominal Tuberculosis.
Rome: University Paediatric Clinic (Professor Concetti)	12	3,715	0.56
Toulouse: Clinique Infantile (Professor Bézy)	10	1,960	0.66
Montpellier: Clinique des Maladies des Enfants (Professor Baumel)	5	1,259	0.95
Lyons: Clinique des Maladies Infantiles (Professor Weill)	13	8,652	0.74
Bern: Jennersche Kinderspital (Annual Reports)	13	4,205	0.59
Budapest: Stefanie Kinderspital (Professor Bokay)	20	27,173	2.00
Vienna: St. Anna Kinderspital (Dr. Hamburger)	5	11,184	0.46
Munich: Universitäts-Kinderklinik (Professor Pfaundler)	2	1,886	0 42
Munich: Gisela Kinderspital (Dr. J. Ibrahim)	5	1,635	0.18
Hagenau: Kinderklinik (Professor Biedert)	10	4,725	0.10
Christiania: Children's Hospital (Professor Johannesen)	10	2,124	0.99
Philadelphia: Children's and St. Christopher's Hospitals, and Children's Ward, Jefferson Hospital (Dr. Le Boutillier)	10	18,016	0.14
New York: Mount Sinai Hospital, Children's Department (Annual Reports)	9	3,082	0.42
Boston: Children's Hospital (Dr. H. J. Bowditch)	37	16,031	0.40

Tuberculous infection of the mesenteric glands in young children is, in my opinion, extremely common (in the Edinburgh district, at least); in its mildest and earliest forms it is very frequently overlooked, and is associated only with very chronic symptoms; but in every case of such infection it is, I think, associated with symptoms, whereas, on the other hand, chronic gastro-intestinal disturbances are very commonly and erroneously attributed to consumption of the bowels.

In my analysis of the cases I review I take note of the facts that these cases are well-marked cases of the condition, and that they all occur in what may be called the hospital class of society.

I have recently examined the mesenteric glands in 50 consecutive cases brought to the *post-mortem* theatre in the Royal Hospital for Sick Children, Edinburgh. These glands were examined as fresh films and as sections, and, as no inoculation experiments were attempted nor means taken to obtain a growth of the tubercle bacillus, my figures certainly under-estimate rather than over-estimate the frequency of occurrence of tuberculous infection in these cases.

I found tubercle bacilli present in the mesenteric glands of 10 out of the 50 cases, or 20 per cent.; 4 of these cases were cases of generalized tuberculosis, 4 cases of abdominal tuberculosis, 1 case of "marasmus," and 1 case of acute endocarditis.

In the series there were 5 cases of chronic wasting or marasmus in only 1 of which were tubercle bacilli found in the mesenteric glands, and in the following 5 cases examination of these glands for tubercle bacilli was also negative—2 cases of tuberculous meningitis with tuberculous bronchial glands, 1 case of phthisis, 1 case of bronchopneumonia with old-standing tuberculous ulcers in the ileum, and 1 case of subacute yellow atrophy of the liver with a tuberculous ulcer in the ileum. Macfadyen and MacConkey,[1] in a research on this subject, made inoculation experiments into guinea-pigs of the mesenteric glands from 28 cases, mainly under 5 years of age (2 only were older, 6 years and 8 years). Of these cases 4 suffered from general tuberculosis, 2 from tuberculous meningitis, 1 from acute miliary tuberculosis, 1 from tuberculous bronchopneumonia, and 20 died from non-tuberculous causes, in 8 of whom, however, tuberculous disease was present. They say, "The animal inoculation experiments showed that virulent tubercle bacilli were present in the mesenteric glands in 10 of the 28 cases, 18 having given negative results. Of the 8 cases diagnosed as tuberculous, 5 gave a positive and 3 gave a negative result. The positive results estimated upon the total number of cases examined amounted to nearly 36 per cent. If the cases diagnosed as tuberculous are eliminated, it will be seen that 5 of the 20 non-tuberculous cases contained virulent tubercle bacilli in the mesenteric glands, and that in these cases the positive results were equal to 25 per cent.

Tuberculous infection of the mesenteric glands in young children in this country is consequently a common occurrence. Why is this so? The question touches upon a subject the magnitude of which is such as to make one naturally shrink from touching upon it in a brief communication, and such that I am compelled to restrict myself very closely to the points I wish to make.

I do not for one moment ignore the importance of climate, fresh air, heredity, bodily cleanliness, or any of the hygienic conditions essential for a physiological existence, but I go straight to the report of the Royal Commission on Tuberculosis and find that abdominal tuberculosis in young children is essentially due to infection by the tubercle bacillus *either* from a bovine or a human source. With regard to which source chiefly I have in the present paper nothing whatever to do. Into the question of the *relative* frequency of infection by means of inhalation or by means of ingestion I do not propose to enter in any detail. One is forced to realize that the maximum lesion of tuberculous infection is frequently not present at the point of entrance of the bacilli. I do not think, however, it can be generally gainsaid that clinically in very many cases of abdominal tuberculosis in young children the disease is primarily abdominal; that in practically all of these cases the lymphatic glands in the mesentery are found to be markedly affected; that, in many, tuberculous ulcers are present in the gut; and that, even where none are found, the intestinal mucosa as a possible source of entrance of the bacillus is not thereby excluded; and, such being the case, there is undoubtedly a very strong prima facie case for the contention that the ingestion of infected material is a common cause of this condition.

Faced by such a weighty probability, the question of feeding in early childhood, from this point of view alone, assumes enormous importance.

Much is said and much is written about feeding in early childhood which is purely exaggerated nonsense or scientific theorizing carried to extreme. Sound common sense, or, in other words, practical prophylactic medicine, has a much larger sphere of application, and it is as an advocate for practical methods of prophylaxis that I approach this subject to-day. Every woman knows that mother's milk is the natural and best food for an infant, and we here, by recognizing that improper feeding—apart from the dangers directly consequent to it—must necessarily diminish the individual's power of resistance, must accept naturally the predisposing part it plays in the infection by the tubercle bacillus. But as practical members of society we physicians, working amongst children, and especially those of us members of the staff of a children's hospital, must go a step further. Maternal nursing is but rarely carried out unsupplemented by the aid of cow's milk in some form, and there can be no possible doubt that milk infected at its source by the bovine bacillus of tubercle, or in the home by the human bacillus, is the source of an immense amount of tuberculous disease.

Legislation on the subject lags somewhat in this country, and we are certainly far behind many nations in our provision of suitable milk for infants and young children.

The prevention and treatment of tuberculosis in the adult is at the present day a favourite, highly estimable, and eminently fashionable form of philanthropy, and, though dairy farms may be less attractive or seductive spheres for well-doing than sanatoriums and pine woods, yet it surely devolves upon paediatric physicians to demonstrate to the community the vital importance of medical supervision of their method of working, and to not only suggest a remedy for the present deplorable condition of affairs, but to endeavour to set an example of improvement.

The development by children's hospitals of centres for the obtaining of clean, non-tuberculous, guarded (sealed bottles) milk would be of the utmost value in many homes, high and low, and I can conceive of no possible greater benefit conferred on the public by any hospital for children.

The cases of abdominal tuberculosis which I propose to analyse here number 137. The object of my analysis being the determination of the characteristics of the condition, I have restricted my survey to that of cases of the type of abdominal tuberculosis pure and simple as much as possible. Further, I include only those cases in which a definite diagnosis by means of physical signs was obtained, and thus cases in which the diagnosis was probable or only possible are excluded from my statistics. All the cases were well-marked cases occurring among patients treated in the Royal Hospital for Sick Children, Edinburgh, during the past few years, and as showing the relative frequency of the indeterminate or questionable diagnosis and the well-marked condition, I may say that of 187 cases examined I have rejected 50, or 27 per cent., as unsatisfactory for my purpose, and have retained 137, or 73 per cent.

Of these 137 cases, 92 were traced to a termination—death (47), or for at least eighteen months (45), while 45 cases were lost sight of within eighteen months.

Age of Onset.

As regards the age of onset of symptoms in the diagram (p. 764), the figures found are demonstrated graphically by the black line. The question of the determination of the age of onset of symptoms of a condition such as this is one to which it is impossible to reply with absolute accuracy, and the figures are only given as being as approximately accurate as is feasible in the circumstances. It may be contended that in dealing with a comparatively chronic condition in the cases of children attending a hospital whose age-limit is 12 years, it is only natural to find that the onset of the disease in the largest number of cases occurs in the earlier years of life, because children affected later would seek admission to a general hospital. This contention, however, finds little support in the statistics of general hospitals, and I think in this particular instance is hardly worthy of being taken into consideration.

From the diagram it is clearly evident that in a marked majority of cases the period of the onset of symptoms is prior to the fourth year of life. I would merely add that of 15 cases commencing during the first year of life, 4 commenced during the first six months and 11 during the second six months. The average age of onset of all cases (137) was 4 years; of non-fatal cases observed at least eighteen months (45) was 4 years 9 months; while of fatal cases (47) it was 3 years.

The figures in Table III seem to warrant the conclusions: (1) the disease is of more serious prognosis the earlier in life its incidence, (2) the earlier its incidence the more acute its nature.

It will be seen that in only 4 cases is it noted that death occurred more than eighteen months after the incidence of the disease. Are these 4 cases exceptional, and would this experience prove to be common if cases could be observed over a sufficient period of time? Of the present series of 90 non-fatal cases, 45 were under observation for more than eighteen months and 45 for less than eighteen months. Of the fatal cases, we saw that 43 ended in death within eighteen months, while 4 ended in death over that period. Of the 45 non-fatal cases observed longer than eighteen months—

2	cases were observed for	from	18	months	to	2	years.
14	,,	,,	,,	2 years	,,	3	,,
9	,,	,,	,,	3 ,,	,,	4	,,
11	,,	,,	,,	4 ,,	,,	5	,,
4	,,	,,	,,	5 ,,	,,	6	,,
3	,,	,,	,,	6 ,,	,,	7	,,
2	,,	,,	,,	7 ,,	,,	8	,,

Now, while of 88 cases observed less than eighteen months the number of deaths was 43, or 49 per cent., of 49 cases observed longer than eighteen months the number of deaths was 4, or 8 per cent. I accordingly conclude that when death supervenes in a case of abdominal tuberculosis it usually does so within eighteen months of the incidence of symptoms, but that in a small proportion of cases a fatal issue may be much longer deferred.

The curve shown by dotted line in the diagram further demonstrates the figures relating to the mortality.

Sex.

Of the total cases (137), 72 were male and 65 female, while of the fatal cases (47), 25 were male, that is, 35 per cent. of the total male cases, and 22 were female, that is, 34 per cent. of the total female cases. The average age of onset of symptoms in the male patients was four years, and in the female patients was three years eleven months. Sex therefore plays no great part in this condition.

History, Personal and Family.

Statistics regarding family history I do not include at all, as the information in many cases is so extremely unreliable. Likewise, as regards the previous health of

TABLE III.—*Age of Onset in Fatal Cases, with Duration of Illness in Months from beginning of Symptoms.*

Age of Onset in Years.	Months.											Total Cases.	Percentage of Fatal Cases.	Average Duration in Months.
0-1 ...	1	1	2	13	3	12	2	4	2	2	6	11	23	4
1-2 ...	5	8	8	3	3	1	3	43	3	8	2	11	23	8
2-3 ...	3	8	10	3	—	—	—	—	—	—	—	4	9	6
3-4 ...	9	16	1	9	14	2	45	3	—	—	—	8	17	12
4-5 ...	6	36	7	18	—	—	—	—	—	—	—	4	9	16
5-6 ...	13	2	—	—	—	—	—	—	—	—	—	2	4	7
6-7 ...	4	14	21	—	—	—	—	—	—	—	—	3	6	13
7-8 ...	—	—	—	—	—	—	—	—	—	—	—	—	—	—
8-9 ...	36	16	—	—	—	—	—	—	—	—	—	2	4	26
9-10 ...	10	—	—	—	—	—	—	—	—	—	—		2	10
Over 10 ...	12	—	—	—	—	—	—	—	—	—	—	1	2	12

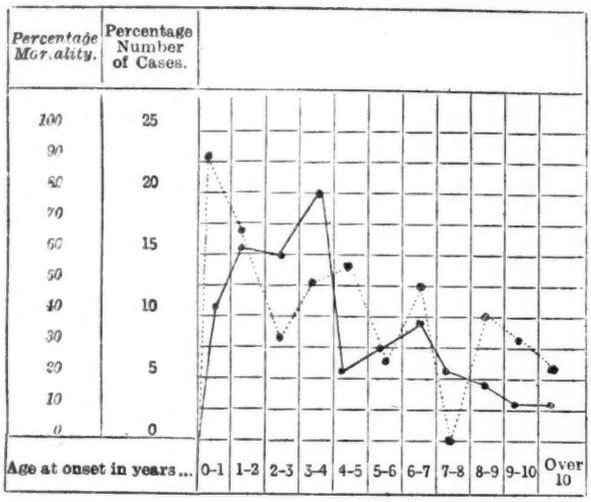
Average duration of illness in fatal cases (47)... ... ... = 9.6 months.
Average duration of illness in cases commencing during first four years of life (34)... ... ... = 7.5 ,,
Average duration of illness in cases commencing after first four years of life (13) ... ... = 15.0 ,,

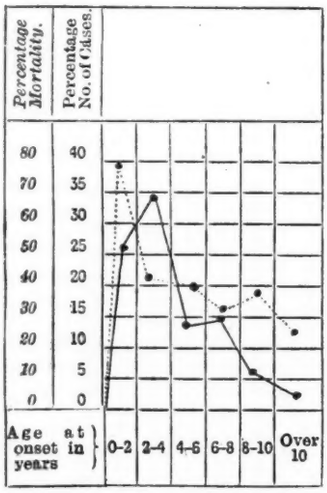
the child, I can but generalize, and say that in about half of the cases the health previous to the onset of symptoms was good.

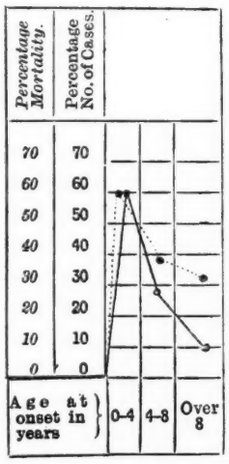
Feeding.

Particular attention was paid to the question of the feeding in infancy of these children, and the following facts elicited: 87 were fed at the breast, solely (very rare) or partially, for over three months, and of these 24 died, a percentage mortality of 28 per cent.; 50 were fed wholly on the bottle or at the breast for only a week or two, and of these 23 died, a percentage mortality of 46 per cent. The difference is striking, and needs no further comment.

Diagram showing (1) Percentage Frequency of Onset at Various Ages; (2) Percentage Mortality in Cases commencing at Various Ages.







..... Percentage mortality. ——— Percentage number of cases.

Early Symptoms.

In the great majority of cases general wasting with abdominal swelling were the chief early symptoms. Diarrhoea and abdominal pain were also common complaints; vomiting was not common; and constipation was rare. Very common symptoms were loss of appetite, drowsiness, and listlessness. In 15 per cent. of the cases the onset followed an infectious disease (usually measles).

Temperature.

During the stay in hospital of all cases the temperature was of course carefully noted, and I have divided the cases as regards temperature into four classes, namely: (1) Those with a high and swinging temperature; (2) those with nothing abnormal in the state of the temperature; (3) those with a slightly raised or practically normal temperature; (4) those with a high and swinging temperature becoming normal. And perhaps a few words are called for in explanation of the latter two types. Those temperatures described as slight or practically normal were temperatures showing no marked swing, but which were steadily or irregularly elevated one or two degrees above normal; temperatures also it might be which every three or four days, or with even longer intervals, became suddenly high and as suddenly dropped again to normal; or temperatures with some slight deviation from the normal sufficient to make it impossible to describe them under the latter term. In some cases the temperature on admission to hospital was high and swinging, and continued so for some time, gradually thereafter dropping to and remaining normal. These cases are included in No. 4. In all cases the *point d'appui* for analysing the case is taken as being the period during which the child was for the first time under observation in a ward of the hospital. The onset and early symptoms of the disease refer to the period before this first admission, the temperature and physical signs refer to the period when first under observation in hospital, and the course of the disease and the prognosis are estimated from the condition then observed.

Consideration of any individual case of necessity includes consideration of many different factors going to form the condition, but before dealing with the more outstanding factors as a combined whole I have thought it advisable to consider them *seriatim*.

Considering the cases from the point of view of temperature, I find that the state of the temperature apparently bears no relation to the age of the child considered by itself, except that in older children (7 years) it is more common to find a high swinging temperature settling comparatively quickly than in children at an earlier age (4 years).

This affords further corroboration for the view that the earlier in life the disease occurs the more acute its course tends to be and the more serious its prognosis, while in older children, though it be acute, it encounters greater natural resisting powers on the part of the patient, and the prognosis is less evil.

Physical Signs.

In all cases great care is necessary in the determination of the physical signs, and is naturally most particularly so in early or slight cases.

Palpation of the abdomen of a child who is standing is obviously valueless, but it must also be fully realized that palpation of the abdomen when the child is sitting or reclining on the mother's knee, though sometimes valuable, is a procedure which *by itself* can never be regarded as proving the absence of abnormal abdominal physical signs. It is absolutely essential that the child should be lying flat on its back, and in the majority of cases the administration of chloroform is necessary for a thorough examination.

The classification of a considerable number of cases of a condition such as this under the heading of physical signs must of necessity be a somewhat arbitrary one, and withal there must be a certain amount of latitude at the discretion of the observer. In the choice of headings and of the cases placed under them I have endeavoured to be as definite and accurate as possible.

The cases as regards physical signs I divide as follows: (1) Those cases in which small (bean to nut size) discrete, enlarged mesenteric glands were present; (2) cases in which large masses of glands were present; (3) cases with very marked matting and thickening of the peritoneum and omentum; (4) cases with free fluid in the peritoneal cavity without any of the preceding signs in addition; and (5) cases with free fluid along with markedly enlarged mesenteric glands.

Relative Frequency.

	Cases.	Percentage.
(1) Small discrete glands	25	16
(2) Mass of glands	96	62
(3) Marked matting	9	6
(4) Fluid	7	5
(5) Fluid + mass of glands	18	11
	155	100

All the cases in No. (5) are included also in No. (2).

In some cases matting of the omentum and masses of enlarged mesenteric glands are clinically indistinguishable, and I think that for my present purposes the two conditions may be classed under one heading.

As regards the relationship between the physical signs and the age of the patient, my figures tend to show that free fluid is relatively uncommon in cases in which the onset of the disease was during the first three years of life, and likewise in patients under 3 years of age at the date of examination.

Analysis of the relation between the physical signs observed and the nature of the temperature shows that—

In 41 per cent. of all cases the temperature showed nothing abnormal (*d*).
In 20 per cent. of all cases the temperature was slight or practically normal (*c*).
In 3 per cent. of all cases the temperature was high and swinging to steady (*b*).
In 36 per cent. of all cases the temperature was high and swinging (*a*).

In Table IV I combine under one heading (*a*) and (*b*) of the preceding table, and under another heading (*c*) and (*d*). The figures given are the percentages of the total cases showing that particular physical sign.

TABLE IV.

Physical Signs.	Temperature. (*a*) and (*b*). High and Swinging, in Rare Cases Steadying Speedily.	Temperature. (*c*) and (*d*). Little or Nothing Abnormal.	Total Cases.
	Per Cent.	Per Cent.	
Masses or marked matting	40	60	87
Discrete glands	20	80	25
Fluid	29	71	7
Fluid + enlarged glands ...	66.6	33.3	18

These figures serve, I think, to demonstrate that only in cases in which free fluid and palpable abdominal masses are both present is an elevated temperature more common than a practically normal one; that where free fluid only is detected marked elevation of temperature is uncommon; and from these facts alone there seems reason to seek for a different causation for the effusion of fluid in the two cases.

Undoubtedly the non-detection clinically of enlarged mesenteric glands does not exclude the possibility of their presence, and the probability at once suggests itself that in these cases the effusion is due to pressure by enlarged glands in the posterior abdomen, whereas in cases with large masses or marked matting the fluid is due to a generalized peritonitis. As one would expect, marked elevation of temperature was less common in cases with discrete glands than in those with large masses.

As regards the relationship between the temperature, physical signs, and age of the patient, I find that those cases with masses of glands usually (7 out of 10 cases) have an elevated temperature when the onset of symptoms occurs during the first year of life—and the same holds true in a less marked degree for cases with discrete glands. At other ages it is more common to find no elevation of temperature. When the age at the period of examination is considered instead of the age at the period of onset of symptoms, it is found that here also cases with masses of glands usually (4 out of 5 cases) have an elevated temperature when the examination is made during the first year of life, and later in life no elevated temperature, but in cases over 10 years of age, as in early infancy, 4 out of 5 show high and swinging temperature.

Consideration of the relationship between the physical signs and the prognosis leads me to include the following tables (V and VI). In the first table (V) I show the result in cases observed at least eighteen months or till death, in relation to the physical signs when the case was first observed. All cases under heading (4) appear also under heading (1).

As good recovery I understand good general health with absence of abnormal abdominal physical signs; and, as fair recovery, marked delicacy in general health or definite persistence of local abdominal signs. From the above it will be seen that the prognosis is most unfavourable in cases with free fluid and palpable masses, and is hardly less so in cases with masses or marked matting. How comparatively favourable the prognosis is in the other two types will also be noted.

TABLE V.

	Death. Number of Cases.	Death. Percentage.	Good Recovery. Number of Cases.	Good Recovery. Percentage.	Fair Recovery. Number of Cases.	Fair Recovery. Percentage.	Total Cases.
1. Masses or marked matting	42	64	12	18	12	18	66
2. Discrete glands ...	3	18	8	47	6	35	17
3. Fluid	2	29	4	57	1	14	7
4. Fluid + enlarged glands	6	67	1	11	2	22	9

Table VI shows the average length of time between the first examination, when the physical signs as noted were observed, and the last examination or death occurred.

TABLE VI.

	Death.	Good Recovery.	Fair Recovery.
1. Masses or marked matting ...	3 months	3.5 years	3.6 years
2. Discrete glands	17 ,,	3.5 ,,	3.4 ,,
3. Fluid	2 ,,	3.9 ,,	3.1 ,,
4. Fluid + enlarged glands ...	3 ,,	2.2 ,,	3.4 ,,

Death consequently ensued rapidly in the majority of cases, and was longest delayed in cases exhibiting discrete glands.

The relation between the state of the temperature and the prognosis noted in cases observed at least eighteen months or till death is shown in Table VII.

TABLE VII.

Temperature.	Death.	Good Recovery.	Fair Recovery.	Total Cases.
High and swinging	33	3	1	37
Slight or practically normal ...	5	6	6	17
High and swinging to steady ...	1 (2 years after)	2	1	4
Nothing abnormal	8	13	12	33

From these figures it is at once apparent of what evil augury a high swinging temperature is, and when the cases are also grouped according to the physical signs, I find that this holds true whatever the physical signs may be. Into the question of whether the elevation of temperature is due to the local abdominal condition or not, I do not propose to enter, and would merely reiterate that no cases are included in my statistics in which at the time of the first observation in hospital marked abnormal physical signs were present outside the abdomen.

Consideration of the relationship between the temperature, physical signs, age of patient at the time of observation of the symptoms, and the prognosis in cases observed for eighteen months or till death, serves to show that (1) a high swinging temperature, whatever the age and whatever the physical signs, is of very evil omen; (2) a slight temperature is of more evil omen the younger the child; (3) absence of temperature, whatever the physical signs, is usually associated with a fatal result only in the cases of the younger children.

SUMMARY.

In summarizing my remarks, I would once more lay emphasis on the facts that the cases with which I am dealing are all those of the hospital class of patient, and are all well-marked cases of the condition. Very early or indeterminate cases of the condition being excluded, the prognosis bears reference necessarily only to the fully developed condition.

(*a*) Clinically, primary abdominal tuberculosis is a common condition in young children in this country. *Post mortem*, tubercle bacilli are present in the mesenteric glands in about one-third (20–36 per cent.) of all cases dying in a children's hospital.

(*b*) As a measure of practical prophylactic medicine, the development of centres in connexion with children's hospitals for the delivery of safe milk is eminently desirable. By such means efficiently guarded (pure or heated) milk could be employed, and the risk of contamination in the home reduced to a minimum (sealed bottles).

(*c*) Analysis of 137 cases of well-marked abdominal tuberculosis shows that the characteristics of this condition are as follows:

1. In a marked majority of cases the period of the onset of symptoms is prior to the fourth year of life.
2. The disease is of more serious prognosis the earlier in life its incidence, and the earlier its incidence the more acute its nature.
3. When death supervenes it usually does so within eighteen months of the incidence of symptoms, but in a small proportion of cases a fatal issue is much longer deferred.
4. The mortality from this condition among children fed entirely on the bottle (46 per cent.) is very markedly higher than among children wholly or partially nursed at the breast for at least three months (28 per cent.).
5. Free fluid in the peritoneal cavity is relatively an uncommon sign in patients under 3 years of age.
6. Only in cases with free fluid in the peritoneal cavity + palpable abdominal masses is an elevated temperature more common than a practically normal one; where free fluid only is detected marked elevation of temperature is uncommon.
7. The prognosis is most unfavourable in cases with free peritoneal fluid + palpable masses (67 per cent. mortality), and it is hardly less so in cases with masses or marked matting (64 per cent.). In cases with free fluid only (29 per cent.) or discrete glands (18 per cent.) the prognosis is much more favourable.
8. A high swinging temperature, whatever the age and whatever the physical signs, is of very evil omen; a slight temperature is of more evil omen the younger the child; absence of temperature—whatever the physical signs—is usually associated with a fatal result only in the cases of the younger children.

REFERENCE.
[1] BRITISH MEDICAL JOURNAL, July 18th, 1903.

THE VALUE OF NEW TUBERCULIN (T.R.) IN SURGICAL TUBERCULOSIS.

By D'ARCY POWER, F.R.C.S.Eng.,

Surgeon to and Lecturer on Surgery at St. Bartholomew's Hospital.

KOCH'S original tuberculin, known as "Old" tuberclin, was introduced in 1890; it was recommended as a cure for tuberculous disease, but did not fulfil expectations. It was a concentrated solution in glycerine of the extracellular toxins produced by tubercle bacilli, and it was injected subcutaneously in doses which, we now know, were unnecessarily large and in unsuitable cases. The diseased tissues became greatly congested, the temperature rose rapidly, and the excessive reaction, together with absence of improvement, soon led to a discontinuance of its use for curative purposes.

Of late years another preparation of tuberculin has been introduced, known as T.R., or "New" tuberculin; it owes its activity to the intracellular toxins contained in the protoplasm of the tubercle bacilli, and not to the extracellular toxins excreted into the culture fluid as in the "Old" tuberculin. The doses are labelled with the weight of dried tubercle bacilli in 1 c.cm, calculated on the basis of 10 mg. of dried tubercle bacilli in 1 c.cm. of salt solution or horse serum. The temperature and the opsonic index have been used as guides to the normal resistance of the tuberculous patients; but as the estimation of the opsonic index is tedious in hospital cases and expensive in private, I have used the temperature as a sufficient guide, the opsonic index being obtained occasionally as a control.

During the last year I made a determined attempt to ascertain the curative value of new tuberculin (T.R.) given by the mouth to patients suffering from tuberculous disease in my wards at St. Bartholomew's Hospital, as well as in private practice. The tuberculin was administered by the mouth, an infinitesimal dose being given at first—usually one hundred thousandth of a milligram in a drachm of salt solution. If the temperature fell and remained uniform at or below normal the remedy was given every other morning before breakfast, but if the temperature rose or became irregular the dose of tuberculin was increased by doubling the quantity without increasing the frequency. In one case, when the tuberculin had been given in doses of one hundred thousandth of a milligram on alternate days for a fortnight to a child after removal of enlarged lymphatic glands from the right side of the neck, there was a marked reaction on the left side on recommencing the tuberculin after a fortnight's interval. The reaction took the form of a rise of temperature to 103° F., malaise, and inflammation with tenderness of the whole of the left side of the neck. In another case, also of glands of the neck enlarged by tubercle, I found that the microscopic structure of the enlarged glands was restored to normal after a course of tuberculin, although they appeared to be caseating when I first saw the child. The effect of the tuberculin was entirely limited to the gland tissue, for the capsular adhesions to the surrounding tissues remained unchanged, and the operation of dissecting out the glands was attended with somewhat greater difficulty than usual owing to the softness and semifluid condition of the glandular substance.

[Mr. Power read notes of cases, stating that he owed those of the hospital cases to the kindness of Mr. D. W. Hume, lately his senior house-surgeon, and to Mr. C. H. S. Taylor, B.A.Cantab., one of his dressers.]

The results point to the conclusion that new tuberculin, given by the mouth in small doses, is useful in the slighter cases of surgical tuberculosis. It is often "sovran," as the older medical writers would have said, against the chronic sinuses which are so often formed after operations upon tuberculous tissues—troublesome cases in which the wound nearly heals but not quite, and where it breaks down time after time upon the smallest irritation. It is valuable in enlarged cervical glands which have not undergone extensive caseation or suppuration. It has failed in this crude form to give any relief to patients suffering from tuberculous peritonitis, tuberculous disease of the joints, and from inflammation of the bones due to tuberculous infection.

It may, of course, be said fairly enough that the slighter cases of tuberculosis would have recovered if they had not been treated with tuberculin. Rest in bed, good food, and the careful nursing which patients receive in a hospital would in themselves have been enough to cure them. But this explanation does not account for the rapid healing of sinuses which had refused to heal until tuberculin was administered, although the patients had been in the hospital for a long time; nor does it explain the improvement which took place in some of my private cases where the parents were in a good position and the children enjoyed every attention that affection and money could procure.

We may say tentatively, therefore, that it is worth while trying small doses of new tuberculin (T.R.) given by the mouth in every case of tuberculous sinus and in tuberculous dermatitis affecting scars. It is also well worth while to try it in cases of enlarged cervical glands. It may be used as soon as the enlargement is noticed, in the hope that the glands will undergo resolution. There is reason to think that when the caseation is not very advanced, and when suppuration is limited to one or two glands, the administration of tuberculin may prove serviceable because the surgeon may limit his operation to the glands chiefly affected, and may leave untouched the innumerable smaller ones, which look like seed pearls and are so often the cause of the relapses occurring in patients who have been operated upon for tuberculous adenitis. If tuberculin be given in minute doses in these cases the smaller glands do not increase, and the patient remains cured. Every one knows that children with glands which are considerably enlarged often get well when they are sent to a bracing seaside place, the glands becoming smaller by a simple process of resolution. The same result occurs in some cases when tuberculin is given, and apparently by the same process. In one case I had an opportunity of examining glands which had got

much smaller after the use of tuberculin. The gland tissue had undergone remarkable changes towards recovery, but the surrounding adhesions which had been caused by the inflammation of the capsule remained unaltered. I had, therefore, to remove glands which, except for their increased size, were normal both to the naked eye and to the microscope. But these glands were embedded in chronically inflamed connective tissue, and required as much skilful dissection as the worst case of enlarged cervical glands. Their removal, too, was followed by a well-marked "reaction," characterized by a temperature of 104° F., which was apparently due to the liberation and subsequent absorption by the tissues of tuberculin from the glands whose capsules had been torn in the process of removal.

The effect upon the temperature of minute doses of tuberculin was very marked in many of the cases, and served as some indication of the necessity for repeating the dose. The temperature rose when too much tuberculin was given; it remained unaltered when too little was given; it remained steady and usually at a point below 98.4° F. when the proper dose was administered. A fresh dose was indicated when the temperature again began to rise above the normal and when it oscillated.

The course may be repeated as often as seems necessary, but care should be taken at the beginning of each fresh course to see that a reaction is not produced, the reaction consisting in malaise, a rise of temperature, congestion and tenderness of the infected tissues. When this occurs the tuberculin should be given in a diminished quantity, or it should be stopped altogether for a time.

DISCUSSION.

The PRESIDENT OF THE SECTION said that as the result of his experience he had little faith in tuberculin as a remedy in severe cases of bone and joint tuberculosis.

Mr. MAYNARD SMITH (London) dissented from this opinion, and disagreed with the surgical policy based on that axiom. He quite believed the use of tuberculin would in time become a routine measure for all tuberculous cases, whether mild or severe. In every case the dosage should be controlled with due reference to the opsonic index.

Mr. R. C. DUN (Liverpool) had found tuberculin of little obvious benefit, and sometimes it appeared to act injuriously.

Mr. ROBERT CAMPBELL (Belfast) said that he had still an open mind as to whether tuberculin was of value or not.

Dr. JOHN MCCAW (Belfast) considered it of value in chronic tuberculosis of the skin just when and where the patient's hygienic surroundings were favourable to recovery. Otherwise where it was used benefit was problematical.

Dr. RALPH T. RICHARDS (Salt Lake City) said that the present opinion of American surgeons regarding tuberculous treatment was typified by the conclusions of Drs. A. J. and E. H. Ochsner, of St. Augustana Hospital, Chicago. They had conducted numerous experiments on various types of tuberculosis, always governing their dosage by careful systematic reading of the opsonic index. Up to date they had not obtained any beneficial results which could not be explained by the improved hygienic conditions under which the patients were brought. At present, in America, little confidence was placed in the reading of the opsonic index because of the marked influence of the personal equation of the investigator upon the results.

Mr. POWER replied briefly.

UNDER the will of the late Mr. John Lomax, of the Hulme Corn Mills, Cheshire, the Royal Infirmary and St. Mary's Hospital, Manchester, each receives a sum of £500.

THE Indian Archaeological Department has made an interesting discovery by finding in an ancient Buddhist stupa (a mound) close to Peshawar, of what are almost certainly (says the *Madras Weekly Mail* of July 29th, 1909) a portion of the ashes of the Gautama Buddha. The relics were enclosed in a rock crystal receptacle, sealed with the Royal Seal of the Great Buddhist Emperor Kanishka, who ruled at Peshawar about the time of Christ. The receptacle was inside a bronze casket, carved with Buddhist figures, including those of Buddha and of the Emperor Kanishka, and exactly at the spot where the Chinese traveller, Hien Tsing, had said they would be found.

SECTION OF TROPICAL MEDICINE.

C. W. DANIELS, M.B.Cantab., President.

PRESIDENT'S INTRODUCTORY REMARKS.

DR. DANIELS, after addressing a few words of welcome to the assembled members, initiated the work of the Section by opening the first discussion.

DISCUSSION ON THE PERSISTENCE OF PROTOZOAL TROPICAL DISEASES IN MAN.

OPENING PAPER.

By C. W. DANIELS, M.B.Cantab., M.R.C.P.Lond.,
Director, London School of Tropical Medicine.

THE persistence of the protozoal infection of a single host has to be carefully distinguished from the persistence of protozoa in general. The latter depends on the complex life-history of the parasite, including its sexual development; the former, as far as we know, depends on the length of time during which asexual multiplication can take place without requiring rejuvenescence by a sexual reproduction.

The great increases in our knowledge of protozoa all point in one direction—namely, to an alternation of processes of multiplication, sexual and asexual.

In many it is conclusively proved (for example, in malaria), that asexual or fission methods of multiplication (schizogony) take place in a warm-blooded host, whilst sexual reproduction is in a cold-blooded invertebrate host.

In coccidia the sexual method of reproduction does not require an intermediate host at all. The external environment is sufficient. In amoebae and intestinal flagellates, lamblia and trichomonas, development in the warm-blooded host is by a process of fission—asexual reproduction—but externally only after encystment, and apparently by a quasi-sexual process, which may be called autogamy. In spirochaetes we have in the blood-spirochaetes evidence that an intermediate host may be necessary, and that a period of time elapses between the alternative host being infected and being capable of transmitting the infection, pointing to a development of a different character, probably sexual, in this alternative host. In trypanosomes we have evidence of direct transmission from one warm-blooded host to another, as in dourine, and also of rapid direct transference occasionally, in *T. gambiense* and *brucei* by Glossina, but by many observers the fact that not every biting fly, but only a fly of the right genus and even of a limited number of species, will serve to transmit the disease has been taken as proving that a development stage, probably sexual, occurs in that fly as the alternate host. The discovery by Kleine that the fly became infective seventeen days or more after being infected, whilst it was not so in the interval, has practically proved that a developmental special stage, sexual, occurs in that fly.

In all these cases the disease-causing period of the life of the protozoa is the period when the asexual reproduction is taking place. The sexual forms are useful, or rather harmful, because they are the usual agents in the transmission of disease from one warm-blooded host to others. It is because of the sexual development that the peculiar distribution of many tropical diseases is due, but as regards the individual host, the sexual reproduction may be ignored.

We are thus, for the purposes of this discussion, mainly limited to the consideration of protozoa in their asexual stages, and, in my opinion, we are inclined to treat the parasites in this respect also as essentially different from other unicellular organisms that multiply mainly, if not only, asexually by fission. It is true that in protozoa more details of structure can be made out, so that it is seen that fission is really a gradual process, and not the sudden process that it appears to be in the fission fungi or schizomycetes, and that there are many unexplained observations as regards the chromatin transformations, particularly in the trypanosomes.

We are inclined also to take views based on analogies with higher forms of animal life, that sexual reproduction is the ordinary method of multiplication, whilst the asexual method is to be considered as somewhat phenomenal and exceptional, instead of, as we see is the case, that the exceptional reproduction is the sexual, and that for prolonged periods only the asexual form takes place, the sexual being in reserve for periods when the environment becomes unsuitable; and possibly the sexual method of multiplication in some, as in the *Spirochaeta pallida* and dourine, may become lost, just as in some of the higher members of the vegetable kingdom—for example, bananas—the cultivated forms cannot reproduce sexually.

In considering the evidence as to persistence of these infections, it is best to take the simplest conditions first, and that of the *Proteosoma* in birds infected by allowing infective mosquitos to feed on them will serve as well as any. In this case, we start with infection by parasites which have been "rejuvenated" by sexual reproduction. There is an interval of some days before any parasites will be found in the bird, and then only in very small numbers; but a very rapid increase takes place, so that in three or four days after their first appearance, ten or more may be seen in the field ($\frac{1}{12}$) at once. At this stage the bird may die, but if not the infection steadily diminishes, but more slowly than it increased, so that in two or three weeks the parasites may be as scanty as they were two or three days before the acme of the infection, and the bird will be quite well again. From thence onwards parasites may be found for months, usually in small numbers, but may ultimately disappear permanently. Any parasites seen will appear to be normal; their spores will be about the average in number.

The parasites do not increase in number, showing that some influence is at work which, though it does not prevent the normal multiplication of the individual parasites, does cause the destruction of the greater number of the parasites as they are formed, and that this influence was not present in the bird when first infected. This could be explained in another way, by assuming that the dying out of the parasites was due to a steady loss of virility in the parasites as the result of too prolonged asexual reproduction; if, however, the blood, whilst a few parasites are still to be found, is injected into a healthy bird, that bird will become infected, and the parasites, at first numerous, will disappear in a similar manner, while on injection of the blood of this bird into a third the parasites will in time again become numerous and again diminish. By inoculations of successive birds, the *Proteosoma* may be maintained for years without any alternation of sexual reproduction or alteration in their characters. It is, therefore, to changes in the host, not to loss of virility of the parasite, that the dying out of the infection is due.

In malaria in man the same series of events occurs. Following the injection of the sporozoites rapid multiplication takes place, so that in rather less than two weeks the parasites are sufficiently numerous, over 300 per c.mm., to cause symptoms. This multiplication will continue up to an extent varying in the individual, but after a varying time in the majority of cases the number of parasites will cease to increase, though they appear normal and must multiply—that is, form merozoites at the ordinary rate—showing that the majority of the merozoites perish. After a time there is a steady and rapid decrease in the number, so that they cease to be sufficiently numerous to cause symptoms, though an occasional parasite can still be found.

Various circumstances accelerate this decline; rest, uniform temperature, removal of causes of irritation, will all facilitate the action, whilst exposure to weather, intemperance, other diseases or injuries, or conditions such as parturition, delay or reverse the action. Quinine abruptly causes a similar decline in numbers, and a few other drugs have a similar action. This decrease, however induced, is temporary. After a varying time parasites again are found readily, and again continue to increase, remain stationary, and decline.

This process may go on for a long time, but not indefinitely, and it is on this point that more observations are required. The older teaching was in favour of the view that once a man had had malaria, he would be liable to recurrence all the days of his life, or at any rate, that any subsequent disease would show a malarial periodicity. The certainty now attainable by blood examination, the larger number of persons who have resided in malarial countries, have shown that a malarial infection does die out completely in persons living in a non-malarial country, and in many cases fairly quickly—in less than a year—though in some, especially benign tertian and quartan, over two years and very rarely indeed three years, and this in spite of taking drugs like quinine for some months. Whether this "natural cure" is due to a weakening or loss of virility of the strain by repeated asexual reproduction or to so marked an increase in the natural resistance and formation of antibodies, may be doubted. In favour of the latter is the fact that persons residing in a country where they are frequently exposed to malarial infection acquire a certain degree first of tolerance and then of immunity. Europeans who spend long periods in Tropical Africa, such as traders and missionaries in Central Africa, suffer far more during the first two years, and may have little or no fever afterwards as long as they reside in the country. Whilst the natives are practically all infected by the end of the first or second year of life, only a small proportion are infected after the fifth year and very few after the tenth.

Here we have instances where reinfection with virile parasites must take place frequently, but little or no infection takes place. The reinfections are as abortive as revaccination.

These same people, however, if they leave an infected area for some months or more, become reinfected on their return to a district where malarial infection is common, and show only slight tolerance to the infection. Such natural immunity is, therefore, acquired by the dying out of the parasites, is maintained by more or less abortive reinfections, and is soon lost unless these reinfections take place. The absence of rejuvenesence of the parasites by sexual multiplication can play a comparatively small part in the natural cure of the disease, the important part being that due to the protective agencies originated and maintained by the parasites themselves. If this fail, and apparently it rarely does so in time, there is no reason against absolute permanency of an infection. The effect of specific drugs, such as quinine, is usually considered too much as a direct effect on the parasite. It may be so in part, but more probably it is as an aid in stimulating the normal destructive powers of the tissues and fluids in the host. In one case half a grain of quinine is ample, in others 30 grains or more is less effective, whilst we know that with very direct poisons the effects are more closely related to the dose.

Multiplication is asexual in the forms producing disease in man, and to all intents and purposes the development is on the lines and subject to similar influences as the schizomycetes. There is no evidence that alternating sexual reproduction is necessary for the maintenance of the pathogenicity or vigour of the strain of any of the parasites. Parasites such as *T. gambiense*, piroplasmata, and spirochaetes injected directly from animal to animal, continue in each fresh soil to multiply with vigour, though the pathogenicity may not be quite constant, any more than it is with the schizomycetes. These variations are important, and particularly so is the development of strains different in their resistance to hostile agencies, as *T. gambiense*, in which a strain may appear resistant to atoxyl, and that the alteration is in the parasite and not in the host in that case is shown by the fact that the atoxyl resistant strain if injected into another animal is still atoxyl resistant.

Unless introduced into fresh soil, though the rate of multiplication of individual parasites does not diminish, the infection ultimately does disappear, though any other cause of ill health may lead to recrudescences when the parasites have been reduced to very small numbers. The resistance and destruction of the parasites is, as in bacteria, an affair, in the main, of alterations in the host, and the time taken varies with different protozoa as it does with different bacteria and with the same bacteria in different hosts.

In considering protozoa as a cause of disease we are apt to lose sight of the essential similarity of protozoal infections multiplying asexually and bacterial infections, and to disregard the principles that guide us in bacterial diseases. The factors are different for each organism and

as to the probability of effective resistance by the host; observations are the only reliable guide.

In malaria, as we have seen, an early limit to multiplication is reached moderately soon, and for a longer period there is a phase during which multiplication of the parasites will again occur, but the intervals between these recurrences becomes longer and the actual attacks shorter, till the parasites appear to be absent and only slight recurrences take place. As regards actual times, clinical experiences and pathological investigations are at variance to some extent. We have clear proofs of malaria in the presence of parasites, and we know that persons will commonly harbour parasites for six months to a year, less commonly one to two years, and very rarely for more than two years, when the possibility of reinfection is excluded.

We also know that in countries where reinfection is frequent that if there are periods of several months, as in the winter in Italy, when reinfection, abortive or otherwise, does not take place, individuals may retain their susceptibility all their lives, but that in actual practice, where there are no such complete intervals as in the malarial tropics after four years' continued residence, a steadily diminishing proportion of people are capable of being infected, whilst after ten years it is exceptional to find a person who can be reinfected; but all this merely shows that a condition inimical to the parasite has been established. We further know that this condition is not a permanent one, and that residence in a country where the possibilities of reinfection can be excluded results in a loss of this immunity, so that they again become capable of reinfection.

We as pathologists, perhaps, are too general in our assertions, and make the *average* experience necessarily the rule, and may have ignored too much the old experience that persons who have lived in malarial countries are liable to attacks of "fever" which resemble malarial attacks, and are disposed to attribute these too generally to other causes, ignoring that there is no real reason why parasites should die out, except for what in bacteriology would be described as formation of antibodies and increase in opsonic power or phagocytosis—that, in fact, a malarial infection need no more die out than a tuberculous one, except that there is acquired sooner a greater resistance on the part of the host, and that with protozoa we have drugs that can aid in the hostile action. On the other hand, there is no evidence of any natural resistance to the malaria parasite, whilst by some bacilli, such as that of tubercle, a healthy person is not readily infected.

With intestinal parasites we have a still more difficult problem to consider; parasites such as amoebae, balantidum and lamblia are not far removed from their saprophytic life, and the conditions in the intestines are not so unlike an external life as those in the blood.

What we do know about their life is that in the intestine they can grow and multiply asexually by fission, as the schizomycetes do, and, when doing so, may set up serious disease; and that in addition they pass encysted forms which appear to represent an attempt at a sexual phase, and that these cysts are the only forms capable of living for any length of time in the external free condition. As might be anticipated, the intestinal organisms are capable of prolonged life in the intestine, but need not invade the tissues or cause any disease even when numerous, and we find, therefore, that the amoebae can live for many years in the intestine, with or without symptoms, according to the resistance of the host. When living thus, without causing symptoms continuously, it is much as it is with the typhoid bacillus in a typhoid carrier. Even in these cases, however, we occasionally get clinical evidence of the presence of the organisms in either an attack of dysentery or in a person who has shown no evidence of dysentery in the formation of a liver abscess with amoebae in the contents; this may occur as long as twenty years, or even more, after leaving the tropics. Lamblia infections are similarly persistent. In these infections, as long as the parasites are living on the changing intestinal contents, no formation of antibodies could have any permanent effect. Changes in the host can only prevent the invasion of his tissues.

To conclude, it appears to me that too much attention has been paid to the parasites themselves and too great stress laid on their protozoal nature; that sounder views would be to consider them as causes of disease as more on a par with bacteria, and, as with them, to use our efforts to increase the resistance which already exists, as well as to endeavour to destroy the parasites. Our specifics may act in both ways, but, in the intestinal parasites at any rate, more in preventing tissue invasion than in killing off the parasites.

DISCUSSION.

Dr. BREINL (Liverpool) said: I am able to relate a case of recurrence of malaria in a patient after an interval of seven years, in which microscopical examinations confirmed the diagnosis. The recurrence was brought about by an acute attack of appendicitis, which, I take it, reduced the vitality of the host, and allowed the latent parasites to reappear in the general circulation. With regard to our experimental work in trypanosomiasis, we have been able to demonstrate that in apparently cured monkeys after a negative interval of at least four months, an intercurrent disease artificially produced, which lowered the vitality of the animal, caused a reappearance of the trypanosomes in the blood. It does not seem to be justifiable to compare closely bacteria and protozoa, as we are at present more familiar with the detailed structures of protozoa than with those of bacteria; and while I admit that it may only be due to our better knowledge of protozoic methods and the larger size of the parasite, still, until more is known, it would be safer not to run the risk of pursuing investigations in what may prove the wrong direction. I am sure that the attempt to apply the well-known bacteriological methods concerning immunity, etc., to protozoa, has been largely the cause of our failure because so little is known about the reaction of the host to the parasite; and it is necessary, in pursuing investigations of this character, that the host be considered as well as the parasite, otherwise the individual influence of one on the other will be overlooked. I am convinced that in some cases asexual multiplication may go on for an indefinite period, and that in others resistant forms may develop at some time which escape the destructive action of the "antibodies," and are capable at a future period, after the disappearance of the antibodies, of resuming an asexual multiplication.

Dr. J. L. MAXWELL (Formosa) said that in attempting to ascertain the persistence of malarial parasites in the blood, after all possible sources of infection had been removed, it was necessary that the patient should live continuously in a non-malarial country. Such being the case, it was impossible to determine the question in a tropical country, and those working there must look for the elucidation of persistency to observers in Britain.

Mr. JAMES CANTLIE (London) said: The disappearance of malaria parasites from the blood of persons who have resided in a malarial country does not always coincide with the disappearance of the effects on the physical state induced by the parasites. For three years after returning to London from Hong Kong I had fever continuously every July and August; the temperature varied between 99° F. and 102° F. Quinine afforded no relief. During the fourth summer I had neuritis of the left upper limb, which was regarded by the authorities as of malarial origin, although no parasites were found in my blood. After trying quinine, calomel in small continued doses, and salicylate of soda successively and systematically, no relief was obtained. The quinine was advised in the belief that the neuritis was due to malaria; the calomel was recommended as the neuritis was considered by another physician to be of hepatic origin; and yet a third advised salicylates to cure the rheumatic state which was believed to obtain. The cure was effected in twenty-four hours by a whole day's work in the harvest field, pitching wheat sheaves into carts. When a patient is invalided home from malaria accompanied, it may be, by a big spleen, anaemia, and the attendant lassitude, the question arises where to send him. I would say: Avoid residing in cities; avoid the seaside; do not go to the South of France, the South of England, or any of the warmer resorts, but instead go in summer to the hills in Scotland or Norway, and in winter go to the mountains in Switzerland and join in such winter sports as skating, tobogganing, etc., or spend the winter in Canada. The custom followed by many persons coming from a hot climate of staying on the way home at places in Italy or the

Riviera so as to avoid plunging at once into a cold climate is mere waste of time. Malaria yields to cold; it is maintained by a warm climate; and the higher above sea level and more bracing the atmosphere, the sooner will the enlarged spleen and the anaemia disappear.

Major T. RITCHIE, R.A.M.C., said: For advance in our knowledge of tropical diseases we must look to the physiological chemist rather than to the bacteriologist. The training of the chemist must be thorough, and many years must be spent in the laboratory before the special work required of him can be reliable or fruitful. I agree with Mr. Cantlie concerning the desirability of sending persons with malaria to high elevations. I have sent patients with malaria up to the hills in Sumatra with great benefit. It is customary to allow the patients to reside at a height of some 2,500 ft. before proceeding higher; this is mere waste of time, and I recommend them to go at once to the highest attainable point, some 7,000 ft. or 8,000 ft. above sea level.

Dr. C. A. STONE (Dooars, India) said there seemed to be a certain amount of uncertainty concerning the mode of action of quinine. Did it act as a direct specific, or in a roundabout way by stimulating the blood or tissues to deal with the parasites and the poison they engendered? In certain cases of malaria, especially malignant tertian, quinine failed to cure. Attacks of fever occurred in spite of quinine administration with great regularity, it might be with an interval of seven days. Were these attacks recurrences or reinfections?

Mr. J. STUART BROOKE (India) agreed with Mr. Cantlie's suggestion as to the advisability of sending malarial patients to the hills. Nothing in the way of treatment was more calculated to promote speedy recovery than residence at a height of several thousand feet above sea level.

Dr. O. E. MCCUTCHEON (Assam) said that the facts of recurrent attacks of malaria suggested that the parasite might remain latent. Malignant tertian attacks might occur at intervals of a fortnight or three weeks. He knew one case in which a young man had an attack of fever with malignant tertian parasites in the blood every second Monday for a considerable time. In these cases quinine treatment was unsatisfactory, and the precautions to prevent reinfection which had proved satisfactory in the case of newcomers to the tropics, did not modify the recurrence of the attacks.

Dr. DANIELS, in reply to the remarks made on his paper, stated that even in short cold seasons in the tropics malaria infections might die out completely, and reinfections might occur in spring. In the West Indies it was noted that the adult native negroes seldom presented big spleens, but the adult Indian immigrants were very frequently found with their spleens enlarged, the explanation being no doubt that the negro, being infected in childhood, had in adult years become more or less immune, whereas new arrivals in the district became infected or reinfected. It must be remembered that many tropical fevers were not malarial; that the parasite and not the toxins it left was the cause of the recurrence. Of that there seemed no doubt, for when filtrated malaria blood was injected into a healthy person, one attack of fever only occurred; there was no recurrence.

DISCUSSION ON THE FEEDING AND TREATMENT OF CHILDREN IN THE TROPICS.

OPENING PAPER.

By W. CARNEGIE BROWN, M.D., M.R.C.P.,
London.

VITAL statistics show that in the tropics the mortality of the infant population follows much the same lines as it does at home; and that whilst variations depend but little on purely climatic causes, they closely correspond to the circumstances, the intelligence, and the capacity of the parents. This is true of all nationalities and races. No matter to what community they belong, if infants are carefully tended and adequately nourished, the rate of mortality is exceptionally low; if they are neglected and improperly fed, it is appalling. The difference between the death-rates of the children of the wealthy and those of the poorest natives is as great as the divergence between the infant mortality of our own middle classes and that of our workhouses.

In most parts of India, in the Straits Settlements, and in the Philippine Islands the average mortality of white infants during their first year is less than at home, and it constitutes not more than 5 per cent. of the total European deaths; but amongst the lowest classes of the natives of all these countries the infant mortality varies from 50 to 60 per cent.

Although figures are difficult to procure, and are not always reliable, the following table, compiled from official returns, compares the death-rate of certain tropical settlements and colonies with that of Edinburgh.

TABLE A.—*Relative Statistics of Birth-rates and Death-rates (Averages of Five Years 1903–7.)*

	Total Births per Mille.	Total Deaths per Mille.	Infantile Mortality up to 5 Years (per Mille of Births Registered).	
			All Births.	Europeans.
Jamaica (population 808,000)	38.4	23.4	657	161
Straits Settlements (population 601,000)	26.37	39.18	556	103
Ceylon (population 3,862,850)	37.14	28.61	523	155
City of Manila (population 235,000)	32.82	42.47	741	174
City of Edinburgh (population 341,000)	22 43	16.00	186	

FEEDING PROBLEMS.

This terrible loss of infant life is almost entirely due to gastro-intestinal disorders which are directly caused by the want of fresh and nutritious milk. Too often cow's milk is unprocurable; when it can be got, its price, judged by native standards, is prohibitive; it decomposes rapidly, and in most cases it is so much adulterated and polluted as to be dangerous. In the absence of the natural food of the infant, the position is, therefore, a serious one; and the problem for practical solution is to find an answer to the question, "How can cow's milk be best replaced?"

A word must, however, first be said on

Breast Feeding.

European women in the tropics are, on the whole, good nurses, and, for at least the first four or five months, a larger proportion of mothers are able to feed their infants than is the case in England. Further, it frequently happens that women who before the first confinement suffer severely from the effects of an exceptionally hot climate, completely regain their health upon commencing to suckle. The quality of the breast milk, too, is generally satisfactory, although the percentage of sugar is somewhat greater, and that of proteids less, than in colder climates.

The breast milk of well-nourished Asiatic women also compares favourably with good samples of human milk in temperate climates; but amongst the poorer classes it is unsatisfactory, and is often so defective in proteids and fat as to be unfit for infants' food.

The following table, prepared from analyses of breast milk which were carried out in the laboratories of the Bureau of Science, Manila, illustrates these features:

TABLE B.—*Analyses of Human Milk.*

	Fat.	Sugar.	Proteid.
König's average of breast milk in Europe	3.80	6.20	2.30
(1) Average of American women in Manila	4.24	6.63	1.45
(2) Average of native women in Manila (better class)	5.38	6.83	1.45
(3) Average of native women in Manila (poorer class)	3.07	7.98	1.29

Cow's Milk.

Numerous systematic attempts have been made to improve the milk supply in the tropics, and large sums of money have been invested in establishing sanitary dairy farms; but the results in almost every instance have been extremely disappointing. So many causes combine to defeat the object in view, that the possibility of employing fresh milk for infant feeding may, for the present, be disregarded; and it is incumbent to look for other sources of nourishment.

Goat's and Buffalo's Milk.

The same objections, in an even stronger degree, apply to the milk of the goat, and water buffalo (carabao, kerbau), which, however, are largely used by natives for infant feeding. Apart from the fact that they can seldom be procured, except in a filthy condition, the differences between the relative proportions of their constituents and that of human milk is so great that it is almost impossible to "humanize" them.

Condensed and Preserved Milks.

The defects of condensed and preserved milks are well known. They have a high value in "calories," of which a child, as it does no work, wants but a small supply; and they are defective in proteids, which are urgently required for the formation of tissue. They lack, also, the essential quality of freshness, and the unknown constituent of milk which is destroyed by heat. In cold countries condensed-milk babies are fat, but poorly nourished; the growth of bone and muscle is inhibited, and the excess of calories—useless for development—is stored as redundant fat.

In the tropics, however, these drawbacks are, to some extent, neutralized by climatic conditions; the metabolism of carbohydrates is more active, and the demand for proteids may be longer delayed without detriment to the child. On the whole, the results obtained by the use of the better brands of condensed milk are fairly satisfactory; and for many reasons some of these products form the best obtainable substitute for breast-feeding. Condensed milk is clean, easily prepared, portable, and fairly nutritious; and, as is shown by the recent enormous increase in the imports of Swiss and other tinned milks into tropical settlements, their practical value is now fully recognized by the native population. There can be no doubt that the general adoption of condensed milk has of late materially assisted in reducing the huge infant mortality, and that, as its consumption continues to extend, still greater benefit will accrue.

There is insufficient time to discuss many of the most important medical questions connected with the artificial feeding of infants in the tropics, or to go fully into the relative values of "cold storage," uncondensed tinned milk, condensed and sweetened, and condensed unsweetened milk, but, for many reasons, the safest and most efficient food for general use in the tropics is a good brand of sweetened condensed milk. When properly diluted and given with an occasional antiscorbutic, products like Eagle milk, Nestlé's condensed milk, and Milkmaid Swiss milk, all of which contain their full proportion of fat and most of their proteids, are usually satisfactory; and, even in the hottest climates, children of excellent physique, both European and native, may be successfully reared on them.

THE COMPARATIVE PREVALENCE OF CERTAIN DISORDERS.

Nothing is more remarkable in tropical pediatrics than the extreme rarity of many diseases which in temperate climates are fertile causes of mortality and of permanent constitutional impairment. In the Eastern tropics, at least, scarlatina, diphtheria, and the acute articular rheumatism of early life are practically unknown; and children, in consequence, escape the protean sequelae of these infections. The change which would be effected in the vital statistics of Great Britain, could we eliminate the mortality originating in these three diseases alone, can scarcely be computed; and it is one of the fortunate compensations of tropical life that the early zymotics levy practically no subsequent supertax of suffering on an already overburdened humanity.

As to some of the other affections incidental to childhood, measles and whooping-cough are fairly well established in the East Indies; epidemics of the former occasionally present features of unusual severity, and adults are frequently attacked—often for the second or third time. On account of the absence of cold, sequelae are, however, rare. Personally, I have never seen German measles. Whooping-cough is usually mild; mumps has been occasionally introduced, but has never spread; and, in most parts of the tropics, the same is true of epidemic influenza. On the other hand, disorders of the digestive tract and of nutrition are much more frequent in early life than in temperate climates; while parasitic affections are almost universal, although their prevalence varies greatly in different places. Among the more important morbid conditions which call for prevention and treatment at the hands of the physician, the following may be noted.

Tetanus Neonatorum.—Infection of the cut surface of the umbilical cord by the specific bacillus of tetanus is extremely common in the tropics, and as practically every case is fatal, an appalling number of infants die of so-called convulsions within a few days of birth. It is stated by many authorities that dark-skinned races are specially liable to tetanus, and that aborting or parturient native women often contract it by vulvar inoculation. There is little doubt as to the frequency of the condition, but there is no evidence in support of the claim for special predisposition on the part of the native, and the prevalence of tetanus is wholly due to the ignorance of native midwives. In other words, this prolific source of infantile mortality is entirely and easily preventable, and many thousands of lives might be annually saved could the attendants at native accouchements be induced to discard the filthy ashes and rags with which they dress the pedicle. Valuable educative work in this direction is being done by missionary and other associations; but in the face of indigenous prejudices progress is slow, and—at least in settlements administered by Europeans—the time appears to have arrived for compulsory cleanliness and the instruction in elementary obstetrics of those who engage in the practice of native midwifery.

Gastro-intestinal Disorders.—During the first two or three years of life, derangements of the alimentary tract are responsible for the greatest share of the mortality. In the majority of instances, the morbid condition is some variety of gastro-enteritis which may be remedied by a change of diet, but in a considerable proportion of cases of severe infantile diarrhoea there is a specific infection by the bacillus of dysentery, by entozoa, or by some other pathogenic organism.

Gastro-enteritis in the suckling usually manifests itself as "inanition fever"—a condition of imminent danger which is one of the most common of infantile disorders in the tropics. The symptoms are high temperature, intestinal pain, constant crying, watery or green diarrhoea, and great thirst, manifested by continual efforts to suck anything within reach. The proper treatment is to stop the breast milk and to feed the infant for two days on nothing but warm albumen water, of which large quantities should be given. From 20 to 40 oz. of water in which, according to the age of the infant, the whites of three or four eggs have been dissolved, is the usual quantity for twenty-four hours. A few drops of castor oil, followed by minute doses of calomel, are beneficial, and after forty-eight hours peptonized condensed milk may generally be given.

In cases of gastro-enteritis the services of native wet-nurses are largely utilized by Asiatics—often with the best results; but, as a rule, these women belong to the lower classes, and their employment is highly undesirable. I have known several instances in which syphilis was conveyed to a child by an apparently healthy wet-nurse.

When enteritis occurs after weaning it is usually a result of indigestion from improper feeding. In such cases there is severe diarrhoea and continuous vomiting, with cramp and other choleraic symptoms; but, if collapse has not set in, the alarming condition may generally be rectified by the administration of a drachm or two of castor oil, followed by fairly large doses of bismuth and Dover's powder. So long as shreds of milk curd, undigested rice, or other unassimilated matter is being passed, nothing except boiled water should be given, but, when the alimentary canal appears to be empty, chicken soup, peptonized milk, or some variety of infant's food may be tolerated.

Intestinal helminthiasis is almost universal in the tropics, and incredible numbers of entozoa are sometimes

harboured by very young children—often with an entire absence of symptoms. The routine use of santonin—a dose once every month—is a sound precept for the tropical nursery; but stronger anthelmintics, such as eucalyptus and chloroform, or kousso, are frequently necessary.

Dysentery.—This disease is the most prevalent and fatal of all the affections of childhood, and is responsible for many disorders of after-life which commence in intestinal impairment. It occasionally originates in an amoebic infection, in which case the attack is typically dysenteric; the bacillary variety, however, is much more common, and the symptoms resemble those of summer diarrhoea at home. Although the seizure is generally fulminating and choleraic in type, comma vibrios can never be found in the dejecta; but a bacillus giving the bacteriological reactions of the Shiga-Kruse species is almost invariable. Treatment is difficult and unsatisfactory; ipecacuanha is useless, and opium, although not so dangerous as is generally believed, is inefficacious. In dealing with acute dysentery in children the best results may generally be obtained by insisting on absolute rest and by limiting the food to barley water, egg albumen, and small quantities of Benger's food. Stimulants always have the opposite effect to what is intended. The frequent use of cleansing and soothing intestinal injections, such as warm water, dilute solutions of boric acid, weak decoctions of simaruba or linseed, is essential. Quinine acts efficiently as an intestinal antiseptic, and should always be given after dysentery. The dejecta must, of course, be destroyed.

The Non-malarial Continued Fevers.—Our knowledge of these disorders in children in the tropics is in a very unsatisfactory state, and, as different opinions prevail as to the actual nature of the condition, these disorders are a source of much anxiety to tropical physicians. One of the most usual types is that a child develops an irregular, but more or less continuous, rise of temperature, which it is impossible to refer to any of the definite or specific types of fever, and which persistently resists all treatment. Quinine is useless, and generally badly tolerated; and the various antifebrile alkaloids are ultimately abandoned on account of the weakness and exhaustion which they induce without permanently checking the course of the fever. Tuberculosis should always be suspected, but as complete rocovery is the rule rather than the exception, that infection is probably infrequent. It will be found in practice that aperients and intestinal antiseptics (for example, calomel, grey powder, or pulv. antimonialis), with plenty of fresh fruit juice, cold sponging twice daily, and, if possible, a change to a hill station, generally give better results than any other method of treatment.

Malaria.—In view of the necessity for the systematic prevention of malaria, and of the influence of the child population in the diffusion of a preventable disease, special precautions are necessary for the protection and treatment of children in malarious districts. As a preliminary step, frequent verification of the infection index is essential; but, unless carried out as part of a general and thoroughly organized scheme, antimalarial sanitation by individual physicians offers little prospect of success. The problem of how to eradicate malaria from native communities without infringing the liberty of the subject is perplexing, but not impossible of solution. The difficulties and the cost of preventive measures have been unduly exaggerated; and it is essential to realize that the child-life of a colony is one of its most valuable assets.

Enlargements of the Liver and Spleen.—These are extremely common in the Eastern tropics in young infants; and although many of these cases can be traced to protozoal infection—for example, malaria and kala-azar—in most instances the origin appears to be non-parasitic. Several observers have noted large numbers of entamoebae in the dejecta, and have regarded amoebiasis as a possible cause of the condition; but this supposition has not been confirmed, and, except that splenic and hepatic enlargements have no relation to hereditary alcoholism or syphilis, nothing is known of their pathology. There appears to be no ground for the statement that these affections show marked racial preference. In so-called idiopathic infantile splenomegaly the spleen becomes enormously hypertrophied; the temperature is irregular, and is uninfluenced by quinine; there is rapidly progressive dyscrasia, and death is generally consequent on a terminal attack of dysentery or diarrhoea. Polymorphonuclear leucocytosis is usual, but is neither excessive nor invariable. In the analogous affection of the liver—infantile biliary cirrhosis—hepatic enlargement generally begins during intrauterine life, and has often made considerable progress at birth. Fever is more or less continuous; the child lies listlessly in bed, but is fretful and irritable; jaundice is always present, and there is marked wasting and marasmus. Diarrhoea and dysentery appear as late symptoms. Treatment is, however, by no means hopeless, and great improvement is sometimes effected by the timely addition of fat to the food. If the child is a suckling it should be weaned and fed on condensed cream diluted with weak albumen water. When fresh bone marrow can be obtained it is more efficacious than any other form of fat, and, in its absence, preserved preparations of marrow may be useful. Arsenic is recommended, but my personal experience of it is unfavourable.

Yaws.—The younger members of most native communities throughout the world suffer from yaws, and the disease is not infrequently transmitted to European children. It is important to remember that there are at least two varieties of yaws—one, in which the infection is general, corresponding to constitutional syphilis; the other, in which the lesions are local, and are analogous to chancroids. *Spirochaeta pertenuis* is, apparently, much less resistant to remedies than *Spirochaeta pallida*, and the systemic form of the disease is generally eradicated without difficulty by a short course of mercurial treatment. Localized yaws heal readily if merely kept clean, but it is preferable to wash the sores two or three times a day with a weak solution of boracic lotion, and, after drying and dusting with boracic acid or calomel, to keep them carefully protected from the air.

Possibility of Rearing a Healthy European Population in the Tropics.

The controversy, now a very old one, as to whether it is possible for parents of pure European stock to rear healthy and reproductive children in the tropics has recently been revived, and it is again authoritatively asserted that the anaemia and malnutrition of white men who have been born and brought up in hot countries is neither essential nor of climatic origin. It is claimed, in short, that tropical diseases are entirely dependent on specific infections; that they are for the most part preventable; and that, if the knowledge which has recently been acquired were fully utilized, the insalubrity of the tropics would cease, and Europeans would be able to perpetuate a healthy and productive progeny. That much—very much—of the ill health still so prevalent in our tropical colonies is preventable there can be no question, but even if malaria, helminthiasis, and other endemic diseases were completely eliminated, it is more than doubtful whether a white population can ever be successfully reared in the tropics. There are factors in permanent climatic adaptation which are not easily apparent, and the intrinsic difficulty of the subject cannot be avoided by pathological generalizations. In the tropics, too, the industrial and social conditions of life have of late years undergone a marked change. Highly paid civil and military officials do not now, as formerly, comprise the majority of the European population. The requirements of administration, together with recent developments in planting, mining, railway construction, and other industries, necessitate the employment of large staffs of Europeans in various forms of enterprise and in the subordinate branches of official service. Many of them are engaged on little more than a living wage, and although it is true that the conditions of life are in some respects better than they would be at home, so far as the present and future welfare of their children is concerned, they are infinitely worse.

It has been customary, whenever possible, to send European children home when they are 6 or 7 years old; and, apart from medical reasons, it is essential that repatriation should not be delayed beyond that time. After the mind of a child becomes receptive, association with servants and other natives is necessarily inhibitive of healthy mental development, and abnormal impressions and tendencies are formed in early life which subsequent educational influences are powerless to remove. Much has been done, but more remains to do, for European children born in hot countries, and it is not only the

concern of the physician to prevent and to heal their diseases, but it is an imperative duty imposed on every one who has at heart the welfare of our great national inheritance to endeavour to his utmost to ameliorate the conditions of the child-life of all races in the tropics.

DISCUSSION.

Lieutenant-Colonel ANDREW DEANE, I.M.S., said that the great majority of native children were breast-fed, and few European mothers were good nursers. Dairy farms were spreading, and when well managed were successful. He preferred some of the prepared infants' food to condensed milk. In gastro-intestinal trouble from improper feeding, with purging, fever, and great thirst, all food should be stopped, and a cool bath be given to reduce temperature. The child should be given plenty of water and be allowed to rest; then, when the tongue had cleaned, careful feeding with whey might be recommenced. In dysentery, castor oil should be given to clear out the bowel, and be followed by quince seed jelly. The nates should be cleansed carefully after every movement of the bowel. The administration of small doses of morphine hypodermically or otherwise in children with gastro-enteritis seemed to answer admirably when everything else failed.

Dr. JAMES L. MAXWELL (Formosa) said: I observe two weak points in the tables shown by Dr. Carnegie Brown. In the table on relative statistics it is forgotten that many of the European children are sent home before they reach the age of 5 years, and this invalidates a good deal the last column of the table. In regard to the table of analyses of milk it is essential that the date after the birth of the child be given, as it is a well-known fact that the poorer classes of native mothers continue to nurse their children for two, three, four years or more, and their milk correspondingly suffers in its nutritive value. I agree with Dr. Carnegie Brown as to the uselessness of buffalo milk for infant feeding, as, owing to the very high percentage of fat present, no form of dilution renders the milk really suitable for infants. With regard to the use of preserved milks, Dr. Carnegie Brown has not mentioned the use of sterilized milk in tins (not condensed), which I have found of great value for infant feeding. At least three brands of such milk are on the market—Natura, Fussels, and Dahl. If condensed milk is used it is important to study the individual child, as one brand will be found to suit one child and another brand another child. I think Dr. Carnegie Brown is mistaken in supposing that the introduction of condensed milk would reduce the death-rate among native children. In my own experience in a city where condensed milk is beginning to be largely bought and sold, I have found that the introduction of condensed milk is adding very considerably to the death-rate of the infants. With regard to the substitute for milk in cases of gastro-enteritis, where such is needed in addition to rice water and albumen water, I would strongly recommend Mellin's Food as a food which can be used for a time entirely without milk or can be used with varying proportions of milk. With regard to drugs in place of the dose of ordinary castor oil, Ricicoll, a form of castor oil, in powder, absolutely tasteless, when mixed with a little milk is easily taken by the youngest children. Bismuth salicylate is, perhaps, the most useful of the drugs, but drugs generally are uncalled for. Brandy is very valuable in very severe collapse, given in doses of 5 minims every hour. I protest most strongly against the routine use of santonin. Santonin is a toxic drug, and should only be given if the child had worms, which can be determined in two minutes by a microscopic examination of the faeces. The enlargement of the liver and spleen in native children is, in my experience, usually due to congenital syphilis. Yaws is not to be found in China, except in coolies who have acquired the disease abroad. They might infect the children in their own house, but the disease did not spread further. With regard to the rearing of children in the tropics, by the use of mosquito-proof houses perfectly healthy children without any trace of anaemia could easily be reared. They should return to Europe about the age of 5, for the reasons given by Dr. Carnegie Brown in his very valuable paper, for which he deserves the warmest thanks of the Section.

Surgeon-General W. R. BROWNE, I.M.S., said: I find myself in general agreement with Dr. Carnegie Brown, and would only draw attention to a few points on which I differ. The first is the advisability of using wet-nurses when a suitable woman is procurable and financially possible. Then as regards the "veto" of water-buffalo milk, much must depend on the proper feeding of the animal. Next, yaws was said to be quite common in the tropics, but this is certainly not the case in Southern India. Lastly, as regards the possibility of the prevention of malaria, it is very necessary to differentiate between European and native children, as in the former it probably is possible to get the due measures carried out, but there seems little prospect for ages to come that full preventive measures can be introduced among the native population.

Major RITCHIE, R.A.M.C., said that the statistics in the first table were misleading. It would appear that the mortality of European children in the tropics was less than that of the children of Edinburgh, but it must be remembered that European children in the tropics were well fed. All corresponded to the children of the middle classes in Edinburgh, whose death-rate would be much less than the total death-rate. These statistics in the table favoured the view that healthy Europeans could be reared in the tropics which the speaker regarded as mistaken. Adult Europeans, who had never suffered from malaria, came home after prolonged foreign service with impaired health. It was not likely that the case should be different with children.

Mr. J. STUART BROOKE, F.R.C.S.I., said: I consider the addition of water, owing to its impurity as a rule, a great source of intestinal trouble in India. I have found morphine at times useful, and I consider brandy a great stand-by in cases of collapse during gastro-enteritis or dysentery in children. There seems no doubt that measles in northern parts of India has become a more serious disease during recent years, and tuberculosis is increasing. Mumps and whooping-cough are met with in the north of India, and seem to run their course much the same as in Europe.

Professor HELLIER (Leeds) asked to what extent was the occurrence of rickets noticed in the tropics, and whether any suggestions could be made for the treatment of children sent home from the tropics, more especially those who were anaemic, debilitated, and often malarial.

Captain J. H. CAMPBELL, R.A.M.C., said: I can confirm, from a series of personal analyses, the statements made as to the large percentage of fat in the milk of water buffalos; but I must dissent from a statement which has been made by Surgeon-General Browne to the effect that the feeding of the buffalo accounts for the unsuitability of their milk. For is not this large percentage of fat over that of human milk the real cause of the difficulty in using the milk for infant feeding? My slight experience with milk obtained from a Government dairy farm's buffaloes, which are cleanly fed, confirms the belief that its unsuitability is not due to bad feeding. A word of praise is, I think, due to the Government dairy farms now established in certain large military centres. These institutions are excellently equipped, and superintended by officers who have received a scientific training in the preparation of dairy produce. The practical outcome is seen in the comparatively healthy condition of infants in large cantonments. A very satisfactory milk is that obtained from a strain of cattle obtained from a mixture of English and Indian breeds.

Captain J. F. ROBB, I.M.S., said: With regard to the remarks on the question of feeding with water-buffalo's milk, I am in complete agreement with Surgeon-General Browne. If the buffalo is not allowed to walk about the villages, but is fed properly and well looked after, I think the milk can be safely and advantageously used. This milk is not used universally among Europeans in Southern India, but in those who have used it very good results have been obtained. As to yaws, I think it is very rare indeed in parts of the tropics; I have never seen any case in Madras. In gastro-intestinal cases I have got very good results from large doses of bismuth salicylate.

Dr. O. MCCUTCHEON (Dooars, India) said: In the Dooars, India, European children, as a rule, do very well up to 5 or 6 years of age. They are mostly the offspring of parents of the better class, and, although the district is very malarious, it is possible with proper precautions for

them to escape malaria altogether. The European mother has, as a rule, a small supply of milk. A properly selected wet-nurse is of great value. Cow's milk, if taken from good cows, in hill cattle in particular, is fairly good. Virol and sanatogen are useful for weakly children. Yaws is unknown; measles is common; mumps frequently occurs in epidemics affecting children and adults alike; whooping-cough in Europeans appears no worse than at home, but is a very serious disease among native children; tuberculous diseases are on the increase; rickets is very rare, but a few cases have been seen.

DISCUSSION ON THE TREATMENT OF CHRONIC DYSENTERY, WITH SPECIAL REFERENCE TO SURGICAL TREATMENT.

OPENING PAPER.

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THE seat of chronic recurrent dysenteric lesions is, as a rule, situated at the junction of the sigmoid flexure and the rectum; and it is chiefly with the anatomy, the anatomical pathology, and the medical and surgical treatment of lesions there located, that I propose to deal.

Ascertaining the Seat of the Lesion.

When a patient with intestinal derangements presents himself for examination, the procedure, after gauging the state of the general health and the important organs, should be to palpate the abdomen; to examine the stools; to examine the bowel by the finger and then by the sigmoidoscope. (1) Palpation of the abdomen may reveal some condition explanatory of the presence of mucus in the stools, such as a tumour or a displaced or enlarged organ pressing on the bowel, but in post-dysenteric states and in long standing cases of recurring colitis the examination will soon focus itself on the sigmoid flexure, for it is in this part of the intestine that the lesions occasioning the trouble will, in the majority of cases, be found. The sigmoid may be found rolling below the fingers as a small tube of the apparent size of a cedar pencil, or it may feel as thick as the thumb. Pain may be elicited along the whole length of the sigmoid, but it may be confined to an increase in severity as the sigmoid is traced towards the pelvic brim. The focal point of the pain will be made out to be at the outer edge of the left rectus abdominis muscle at the level of a line drawn horizontally inwards from the left anterior superior spine of the ilium. There, not as constantly as we find McBurney's point over an inflamed appendix on the right side, we find a point on the left side of the abdomen indicative of the seat of a bowel lesion causing chronic and recurrent attacks of intestinal flux with mucus or blood and mucus in the motions. (2) Careful examination of the stools is, of course, essential in coming to a conclusion as to the nature of the ailment in question. A normal stool is difficult to define, but I judge a stool to be normal or otherwise according as it sinks or floats in water. Normal faeces sink in water, and departures from this rule may be complete or partial, and the healthiness of the motion is in direct proportion as the whole or part of the motion sinks or floats. Naked-eye inspection, washing the faeces to ascertain the presence of mucus, blood, or undigested food, are not sufficient; the microscope can alone determine whether ova are present, or chemical tests in obscure cases are required for diagnosis. (3) Digital exploration of the rectum should never be omitted. (4) The sigmoidoscope can alone determine the presence and seat of a lesion when it is beyond the reach of the finger.

Dysentery and colitis, when acute, involve a great extent of the colon; but when either disease becomes chronic it is usually only in the neighbourhood of the sigmoid flexure that delay occurs in the healing process. The delay not infrequently degenerates into chronicity, and the bowel exhibits a localized patch of disease, ring-like in extent, or occupying, it may be, but a few inches of the length of the gut at the junction of the sigmoid flexure and rectum. Since the introduction of more exact methods of making a high rectal examination by the sigmoidoscope much that was mere guesswork has become a question of fact, and one can now see plainly the lesions in the bowel during life.

The Sigmoid Flexure (Iliac and Pelvic Colons).

So impressed have I become with the part played in chronic dysentery by the sigmoid flexure that I, some years ago, set to work to study this portion of the bowel anew, and in several previous contributions I have published the results of my examinations. I will shortly recapitulate these: The sigmoid flexure commences at the sudden diminution in the calibre of the bowel which marks the spot where the wide descending colon ends. The sigmoid ends as a narrow tube in the pelvis by joining the wide upper end or first stage of the rectum. At the narrow ends the sigmoid is bound down so firmly by the peritoneum that but an infinitesimal amount of play is given to the gut at these points. Between the upper and lower ends the sigmoid flexure has usually a mesentery which allows of freedom of movement varying considerably in amount. The possible movement may be limited to a mere capability of rolling backwards and forwards below the fingers during clinical examination, or the mesentery may be so ample that the sigmoid may loop down across the pelvic brim to within the area of the pelvis. The latter condition is, however, abnormal, as the examination of the bowel of healthy children shows. On removing and opening the sigmoid flexure and part of the bowel immediately above and below, one is struck by the anatomical peculiarities of the tract. When opened and laid on a flat surface, especially if the bowel is allowed to lie in spirit and water for a few days, it will be observed that whilst the end of the descending colon, the middle section of the sigmoid, and the upper end of the rectum will lie quite flat, the junction of the colon and sigmoid, and also the junction of the sigmoid and rectum, refuse to lie flat, but tend to curl up rather and to suggest a narrowing at these points. Closer examination will show that the diameter of the bowel is lessened at these points, and that when held between the finger and thumb there is actual thickening. The mucous lining of the bowel is different in the sigmoid to that seen at any other part of the colon. The mucous coat is firmly incorporated with the submucous coat, which in turn is tougher and more firmly adherent to the muscular coat than elsewhere. The slight folds and ridges of the sigmoid mucous membrane run, as a rule, parallel to the lumen of the bowel, whereas in the adjacent portion of the colon and rectum the ample folds and puckerings are oblique or transverse to the lumen. At the lower end of the sigmoid especially the circular muscular fibres in a normal gut are thickened and present a condition akin to the pylorus at the gastro-duodenal orifice of the stomach. I have been tempted to regard the junction of the sigmoid flexure and rectum also as a pylorus worthy of a distinctive name, and some years ago I styled it the "sigmo-rectal pylorus," and gave the name "colo-sigmoid pylorus" to the spot where the wide colon joins the narrow sigmoid. When the outer aspect of the sigmoid is examined it will be seen that the longitudinal fibres of the bowel participate in the anatomical peculiarities, for at the upper, or colo-sigmoid pylorus, the bands approximate each other to separate below, but at the sigmo-rectal pylorus they come together again and actually touch each other, and in yet a few cases I have examined the longitudinal fibres seem to intermingle. That the sigmoid flexure is a distinct entity in the anatomical features of the bowel no anatomist can gainsay, and in its physiological aspects it would seem to play an important part in consequence. Until faeces enter the sigmoid flexure they are void of shape; as they emerge from the sigmoid the faeces are moulded to the rounded shape we recognize as characteristic of a healthy stool. They lose some of their moisture during the passage and perhaps are deepened in colour. By the passage of the faeces through the sigmo-rectal pylorus the necessity for defaecation is announced. We are made acquainted that the rectum is filling, and that, although we may refrain from going to stool for a time, we are aware that the occasion is at hand. The function of the sphincters at the anus is not normally to

sustain the column of faeces extending away upwards to the colon, but merely for a time to check the rectum overflowing when filling. The dial for the necessity of defaecating is at the sigmo-rectal pylorus; the temporary retention is the act of the anal sphincters. The sigmo-rectal pylorus is the narrowest point of the large bowel, and, as at all the orifices in the alimentary tract from mouth to anus, functional and pathological abnormalities or lesions are most prone to occur, so at this narrowed point we find the same law holds good, and here congestion, catarrh, ulceration, and stenosis are apt to occur in greater frequency than elsewhere; and, whilst other portions of an inflamed or ulcerated colon may speedily recover, the narrow sigmo-rectal pylorus or junction is, from its anatomy and functional activity, apt to be delayed in its healing and to become stenosed. Normally, there is a slight intussusception of the sigmoid into the rectum, and abnormally, or as the result of chronic dysentery, this intussusception may be so marked that the sigmoid flexure, thickened and stenosed, and perhaps ulcerated, may be felt by the finger, like the narrow end of a pear, protruding into the lumen of the rectum. This condition of the rectum, with the pear-shaped protrusion, resembles the vaginal passage with the uterus at the upper end.

The Effects of Stenosis of the Sigmo-rectal Pylorus.

I have, in previous contributions, classified the lesions and conditions most likely to induce mucus in the stools, be it mucous casts of the intestine, mucous flakes, or the gelatinous-looking masses that frequently precede, accompany or follow defaecation. (1) The causes acting without the gut are any tumour or enlarged organ pressing on the colon. (2) Causes acting within the bowel are worms and their ova, chronic constipation, etc. (3) Causes due to lesions of the bowel wall: (*a*) Acute dysentery, both bacterial and amoebic; (*b*) ulcerations of whatever variety; (*c*) kinks in the sigmoid, due to chronic distension of this portion of the bowel between its upper and its lower pylorus; (*d*) more distant lesions, such as appendicitis; (*e*) stenosis of the sigmoid, more especially of the lower or sigmo-rectal pylorus, due to malignant growth, to post-dysenteric thickening, fibrous or other forms of stricture, or growths which affect the lumen lower down; (*f*) invagination or intussusception of the sigmo-rectal pylorus into the upper end of the rectum.

Intussusception of the Sigmo-rectal Pylorus.

This state is the one I particularly wish to emphasize. The lower end of the sigmoid normally protrudes slightly into the upper end of the rectum. When there is constipation, congestion of the mucosa, ulceration, or any abnormal condition of the mucous membrane at the lower part of the bowel, this protrusion is increased and the lower end of the sigmoid—the sigmo-rectal pylorus—becomes intussuscepted for some distance into the rectum. It is here the trouble is located in chronic ailments of the lower end of the bowel. Persistence of the intussusception leads to irritation during the passage of faeces, especially when hard, with the result that a thickening of the wall of the gut obtains and a stenosis is developed. The stenosis leads to further obstruction and intussusception, and a persistent lesion calculated to cause chronic trouble is established.

Given a stenosis of this pylorus the consequences are obvious. These may, perhaps, be best illustrated by taking the effects of a stricture of the urethra as an example. When a deep-seated stricture of the urethra occurs, a drop of urine, after micturition, remains in the pocket behind the stricture. In time this causes a catarrh of the mucous surface of the urethra behind the stricture, catarrh leads to congestion, to ulceration, and it may be to perforation of the urethra, when extravasation of urine into the perineum takes place. The mucous surface of the urethra back to the bladder and the bladder itself may become inflamed, with the result that there is urethral discharge and a mucous deposit in the urine when passed. Cystitis, if the stricture is not relieved, may develop; it may disappear with treatment, to again occur if the stricture is not properly cured. Again and again may the condition recur and subside until the bladder wall, the ureters, and the kidneys are involved. In the case of an intestinal stenosis the result is similar. Given a narrowing of the junction of the sigmoid flexure and rectum (the usual seat of such a lesion), the more solid faeces are apt to be retained, the mucous membrane behind the stricture becomes catarrhal, congested, inflamed, and it may be ulcerated, with the result that mucous excretion is increased, it overflows the stricture, accumulates in the rectum, and comes away before the stool. Above the stenosed portion the mucous surface becomes at times irritated and inflamed; there is a recurrence of the so-called dysenteric symptoms, inasmuch as there is some fever; blood stains the mucous secretion, or flakes of blood-stained mucus appear, when the dysentery is said to have relapsed. This is no true relapse of the disease, it is merely the local congestion which is liable to occur in any mucous surface the seat of stricture, as illustrated in the case of the urethra. Recurrent dysenteric attacks are therefore due to a local lesion, a stenosis of the sigmo-rectal pylorus, and the mucus in the stools which persists between the pronounced relapses is only the expression of the presence of this stenosis at a time when from treatment or care in diet the congestion is at its lowest and the lumen of the tube for the time being allows the more fluid force to pass without much disturbance. Recurrent dysenteric attacks and persistence of mucus in the stools are therefore not recurrences of latent infection, and are due to the effect of an uncured stenosed bowel. With this principle established the treatment is simple and capable of being placed on a scientific basis—namely, the cure of the stenosis. I do not wish to enter into the discussion of the question of amoebae being the etiological factors in the initial disease, but the presence of amoebae in the stools in recurrent dysenteric attacks are certainly not the active agents in producing these recurrences. Amoebae may persist in the stools for a lifetime after an attack of dysentery, but when no stenosis is present they will not of themselves induce relapses. When no stenosis is present there will be no relapse. In other words, relapses indicate a stenosis.

I make no distinction between chronic post-dysenteric states and chronic colitis, be it chronic forms of mucous colitis, of membranous colitis, of ulcerative colitis, or of follicular ulcerative colitis; in each and all of these the cause should be looked for, and when no extra-intestinal or intra-intestinal origin is present it will be found to be due to stenosis of the sigmo-rectal pylorus.

Diagnosis.—The Sigmoidoscope.

There is but one method of recognizing the conditions above referred to—namely, by the use of the proctoscope or the sigmoidoscope. On passing a sigmoidoscope, it is better not to have the patient under an anaesthetic. All the accidents recorded when this simple operation is undertaken occurred when the patient was insensible. The patient's sensations are a useful guide to the examiner, and they should not be blunted or annulled by an anasthetic. The instrument is to be introduced with the patient on the left side, on the back with the pelvis raised, or in the knee-elbow position. The tube is passed through the anus, and its point pushed along a line from the anus to the umbilicus for two inches. The point is then directed backwards for three or four inches along a line from the anus to the tip of the spinous process of the fifth lumbar vertebra; the direction is again changed, and the point advanced along a line from the anus to the left sacro-iliac synchondrosis or on the surface of the body in the direction of the cartilage of the eleventh rib. When passing the tube and it reaches a distance of five inches from the anus in the adult, the patient always calls out "Stop!" On being asked if it hurt, the answer is a doubtful "No, but it is uncomfortable, and I feel as if I was about to have a stool." If there is trouble at the sigmo-rectal pylorus, the patient will give an exclamation, as if in pain, the moment the instrument reaches it; and should the passage of the sigmoidoscope be pushed, the patient will have great pain, rendering the onward passage, or even the mere maintenance of pressure, unbearable. This person has an abnormal bowel, and the lesion is situated at the junction of the sigmoid and rectum. If the seat of the lesion is examined through the tube there may be seen, according to the affection, congestion, granulations, ulcers, single or multiple, follicular suppuration, or cicatrices. The sigmoid may be seen protruding into the rectum, and presenting an appearance comparable to an os uteri, with an environment of granulation tissue or so-called cauliflower excrescence.

Treatment of Post-dysenteric Lesions.

The classification of the seat of lesions calculated to produce mucus (in its widest sense) in faeces simplifies the scheme of treatment. If the cause arises without the gut, be it a tumour, the pressure of a displaced or enlarged abdominal organ, bands of adhesions, uterine affections, or any remediable or removable cause, the procedure is obvious; if the bowel trouble is traceable to causes within the lumen of the tube, be it intestinal parasites or some rectal obstruction, the course of treatment is equally apparent. When the lesion is in the bowel wall, attended by intussusception of the sigmo-rectal pylorus into the rectum with attendant obstruction of the lumen of the tube—a stenosis—the treatment resolves itself into dietetic, medicinal, and surgical.

Diet.—The effect of diet in lesions of the large intestine beyond the caecum is disappointing. The patient, asked if diet has much effect upon the nature of the stools, almost invariably answers in the negative, and my experience fully bears out the truth of the reply. Suitable diet comes to be merely a question of relieving the local intestinal congestion in the lower part of the colon and sigmoid, for which purpose a "non-irritating diet" is given. This is accomplished by the exclusion of vegetables and fruit from the diet, the exhibition of foods which allow as little residual as possible for the bowel to get rid of. Meat, eggs, jellies, soups (strained), rice water (conjee), and fruit juices accomplish this purpose. By meat I mean beef. Fresh beef pounded, finely minced or served as cut from a joint, is easily digested, leaves little to be got rid of, and supplies by its fresh juices a protection against the scorbutic condition which so frequently accompanies long-standing intestinal flux or bowel disturbance of a chronic nature. Milk, the stand-by of the unthinking practitioner, has nothing to commend it as a food in intestinal troubles, be it in sprue, colitis, or post-dysenteric lesions. If the object is to procure rest for the intestine, then most certainly milk does not give it. In sprue, for instance, the milk taken is mostly got rid of as curd—the "solid stool" of the believer in milk as a treatment in sprue and intestinal flux generally. The so-called "solid stool" represents milk acted upon by elements in the gastro-duodenal region whereby it has been separated into whey and curd. The whey is absorbed, and on it the person undergoing the milk cure mostly lives; but the curd passes as the "beautiful solid stool." Examine this stool and one finds that it has not the odour of faeces, that it has not the appearance or texture of faeces—that it is merely a mass of milk made into curd by passing through the length of the intestine, as it might have been done by merely adding rennet to milk. The passage of this mass of curd, or "milk stool," does not bring rest to the intestine, and therefore is useless as a "curative" dietary in intestinal lesions associated with ulceration, be they due to typhoid, tubercle, dysentery, colitis, sprue, or to stenosis in any form.

A mixture of meat and milk diet, which is so frequently partaken of in ordinary day life, is unhygienic for both the sick and the whole. Even in Mosaic times it was laid down that milk should not be taken until two hours after having eaten the flesh of goats; yet in modern times the milk pudding follows the meat course with almost invariable regularity. I have advocated the meat treatment in sprue and intestinal lesions, generally in opposition to the milk treatment, for years. I have had a few followers, but as a rule medical men hover between the two opinions in vogue and effect a compromise by giving a mixed meat and milk diet. There can be no compromise except to the detriment of the patient. Milk, neither in the experience of the early Egyptians and Jews nor according to the findings of the most recent physiological laboratory, should be given with meat. I frequently give my patients a "milk day"—that is, a whole day on milk, for I find that three "meat days" followed by one milk is at times beneficial; but there is no "mixing" of diet. But a diet, be it ever so absorbable and leaving ever so little refuse, does not do away with the excretion of faeces, and so long as the local lesion attendant upon chronic intestinal flux remains at the sigmo-rectal pylorus, so will retention of faeces, catarrh, mucous hypersecretion, ulceration, and occasional recurrences or relapses of the flux occur. Diet, however, will not cure the ailment in question; it may relieve by lessening local congestion, but will not cure the stenosis.

Drugs.—When one has to treat medicinally a case of recurrent dysentery or a post-dysenteric exacerbation two lines of treatment occur as feasible. One is the "Epsom salt" treatment so successful in acute dysentery in some countries, so hopelessly unsuccessful in others as to constitute a legitimate basis for differential diagnosis between the types or the causes of dysentery. The "Epsom salt" form of treatment is useless in chronic intestinal ailments associated with flux and mucus in the stools. For old tropical residents with diarrhoea due to alcoholic liver a severe course of "Epsom salt" treatment is highly beneficial. Ipecacuanha, the other line of treatment, is beneficial at times in post-dysenteric lesions, but in others it is useless. When successful it will be found to be so when the dysenteric trouble is really a relapse—a recurrence owing to the primary trouble being uncured. Ipecacuanha is useful and reliable only in tropical dysentery and in relapses which occur within a month or two after the apparent subsidence of the initial attack. Later, when the trouble is chronic, it will be found to be disappointing. When, in fact, the disease has reached the stage in which local lesions are causing the trouble, be they ulcerations, cicatrices, or stenosis, ipecacuanha has little or no effect.

Lacto-bacillin in Intestinal Flux.

It may be interesting to practitioners of tropical medicine as well as to others to know that lactc-bacillin was first used in this country in the treatment of post-dysenteric ailments and in sprue. Within thirty-six hours after the delivery of Metchnikoff's lecture at the Royal Institute of Public Health, in response to a telegram to Paris, I obtained the lacto-bacillin preparations and proceeded to administer them to persons suffering from intestinal flux of tropical origin in various forms. In the treatment of sprue by lacto-bacillin, I was disappointed, but not unexpectedly so. Sprue stools present an essentially acid fermentation, and I was prepared to find that the lacto-bacillin increased that acidity; this actually occurred, and the sprue condition became worse. It was only when I left off the lacto-bacillin after six days, and gave an alkaline powder consisting of calcined magnesia and bicarbonate of soda, that I found the benefit of the lacto-bacillin. I can only attribute the improvement in such cases to the presence of the bacilli exhibited exciting a chronic state to one of exacerbation, and subsequently allaying the increased activity by the alkali. As in chronic keratitis a clearance of the cornea may be effected by exciting inflammation by the introduction of septic material, so by stirring up a passive intestinal fermentation or lesion into an active one, and then cutting it short by counteracting by an alkali, is the subsidence likely to prove permanently beneficial. In this sense only does the lacto-bacillin treatment do any good in sprue. The lacto-bacillin treatment is, however, most valuable in stomach and duodenal catarrhs, in gastro-duodenal fermentations arising from dilatation of the stomach, or in case of fermentation due to catarrh. For the Anglo-Indian of middle age the subject of exhausted digestive functions, characterized by a dry and rather shrivelled skin, loss of body-weight, a splashy stomach, a small liver, irregular intestinal flux at times of the nature of (sprue or) fermented stools, the lacto-bacillin in the form of the soured milk treatment is extremely valuable.

Local Treatment of the Lesions attended by Mucus in the Stools.

When the sigmo-rectal pylorus is examined by the sigmoidoscope the treatment will be determined by the lesion present.

1. When there is mere congestion with a slight intussusception, the condition will usually yield to a diet of a non-irritable and non-residual producing character (for example, meat) combined with rectal enemata of warm sea-water once or twice daily for two or three days and afterwards less frequent injections. When sea-water cannot be obtained, coarse sea-salt, a tablespoonful to one and a half pints of water, will serve as a substitute, but fresh sea-water brings away mucus and cleans the surface of the bowel to an extent far beyond any other medicated or natural application. Not only does the sea-water seem

capable of cleansing, but it also produces a curative effect which is at times most satisfactory.

2. When there are actual ulcers to be seen by the sigmoidoscope I find the best application is pure carbolic, preceded or followed by sea-water injection. The carbolic acid may be applied every second or third day as required.

3. When the lesion is of old standing, when there is thickening of the bowel wall producing stenosis, the only rational treatment is dilatation of the strictured orifice. Just as a strictured urethra requires the passage of bougies to dilate and to absorb the obstruction, the stenosis of the bowel with its attendant mucus overflow from above the seat of stricture must be dilated. The tube, a rather soft rubber tube with a stiffened end and eyes at the neck, is passed along the tube of the sigmoidoscope (or better the proctoscope as being shorter) and pushed through the stenosed orifice of the "os uteri-like aperture" in the sigmo-rectal pylorus. This is not always an easy proceeding, and disappointment is apt to follow attempts at its introduction, but once through improvement is rapid, and the second and following ventures become progressively easier. It is unnecessary, I hope, to draw attention to the difficulty of introducing a long tube high up into the bowel. For once, even in a normal bowel, that the medical practitioner passes a long tube up the rectum through the sigmoid flexure and into the descending colon, I am not exaggerating when I say that in the most skilled hands this can be done not more than once in twenty times. Even when introduced through the tube of the sigmoidoscope it is a most difficult thing to accomplish. I know this is not generally believed, and I have been many times accused of exaggerating the difficulty. One disbeliever who, after passing the tube apparently successfully, and even professing to feel it in the sigmoid flexure through the abdominal wall, agreed to have his statement tested by an *x*-ray photograph and was astonished to see the length of the tube coiled up in the rectum. The attempt to pass the tube through the stenosed orifice is, however, well worth persisting in, for its passage means cure in many instances with disappearance of the mucus, the relapses, the alternating constipation and diarrhoea, and of the autointoxication which accompanies the retention of faeces due to stenosis.

Surgical Operations in Lesions of the Large Bowel, Accompanied by Persistence of Mucus in the Stools.

When, after some months of treatment by diet, by medicines, by enemata, and by local applications, mucus in the stools persists, with, occasionally, recurrences of dysenteric signs, little or no improvement is obtained, it is necessary to consider what further steps may be taken. Opening the bowel at one of several points is indicated, and the seat of the lesion must determine at what point the colon is to be opened. The object of the operation is either (1) to relieve the diseased surface from the irritation caused by the passage of faeces, or (2) to be better able to wash out the bowel thoroughly and thus free it of deleterious discharges; or (3) to allow of the introduction of remedial or disinfecting applications.

1. *Opening the Appendix.*—When the whole of the large intestine is the seat of very chronic trouble the appendix ought to be opened, stitched to the surface, and the bowel washed out through the opening once or twice daily with some disinfecting fluid; through this aperture also some chosen drug, such as ipecacuanha, quinine, or some other supposed specific, can be introduced. In theory, the measure has everything to recommend it; in practice, it has several drawbacks. "Where is the appendix?" is not an uncommon remark when the peritoneum is opened in the right iliac region, or "How is the appendix to be freed of adhesions and brought to the surface?" is not always easily answered or accomplished. But even given an appendix successfully anchored and the bowel satisfactorily flushed day after day, cure is a slow process, and means not days or weeks, but at times several months before apparent progress is made; so slow, in fact, that one begins to doubt the benefit of washing out the bowel at all. Opening the appendix, moreover, does not allow of rest to the diseased surface of the intestine, for the contents must still pass along to the anus.

2. *Opening the Caecum.*—Few surgeons care to adopt this procedure; the annoyance of the passage of fluid faeces at irregular and frequent intervals disturbs the patient to the point of distraction, and, as the bowel may have to be kept open for months, it is not an operation that commends itself.

3. *Opening the ascending colon* in the right lumbar region allows of rest to the intestine beyond and admits of the introduction of enemata and other remedial measures.

The above steps are necessary when the whole tract of the colon is the seat of trouble, and, of these, opening the right colon is by far the most thorough and efficacious.

4. *Opening the Sigmoid Flexure.*—In 90 per cent. of chronic post-dysenteric cases, and in so-called chronic colitis, the seat of the trouble will be found from five to eight inches up the bowel from the anus. Any extension upwards from this point into the descending colon will be found secondary to the sigmo-rectal lesion, and the removal of the cause will speedily cure the secondary or induced catarrh of the colon. I have, in cases where applications by way of the anus and rectum—whether sea-water injections, the use of drugs, or the introduction of a long dilating tube—have proved inefficacious, followed the practice lately of opening the sigmoid flexure.

In cases of so-called chronic colitis, the result, it may be, of or supervening upon previous attacks of dysentery, I have never found the upper part of the sigmoid seriously, and in the majority of cases not at all, affected. In acute colitis it is different; opening the sigmoid is useless, and seems to have done harm in cases in which I did so. By opening the sigmoid, the seat of trouble at the junction of the rectum and sigmoid is relieved from the passage of faeces, and remedial measures can be adopted by way of both the anus and the artificial opening in the sigmoid more intimately and immediately than when the bowel is opened higher up. Even with the sigmoid opened, when the prolapse of the sigmo-rectal pylorus is pronounced, and there is considerable amount of local thickening, it is difficult, and at times impossible, to pass a dilating tube through from the anus below, or by way of the opening in the sigmoid above. As I consider this essential to cure in many cases, and finding it impossible to pass a tube from above downwards, or from anus upwards, I have adopted the following expedient: With a bed-pan below the patient, I introduce the nozzle of a douching tube into the lower opening in the sigmoid and wash through. I then introduce a short silken thread into the opening in the sigmoid and get the thread carried along through the obstruction until it appears at the anus. Tying an india-rubber tube of narrow size to the thread, I pull it through from sigmoid until it appears at the anus. Larger tubes are gradually introduced until a tube ½ in. in diameter is admitted. The tube is perforated at intervals, so that remedies of various kinds can be injected; formidine emulsion or ichthyol 10 per cent. can be injected along the tubing and have beneficial effects. When the stenosis is dilated and the ulcerated surface cured, the opening in the sigmoid is closed in the usual way.

5. *Excision of Part or the Whole of the Colon.*—Complete removal of the colon is justified when the whole of the mucosa of the large gut is implicated and practically destroyed, and the organ is not only functionally useless, but an actual source of danger, owing to the secretions from its surface causing auto-intoxication or when the wall of the intestine is so thinned that it may perforate. Excision of the lesion at the junction of the sigmoid and rectum is justifiable when all less radical methods have failed. That bowel ulcerations should be dealt with so as to prevent the possibility of pylephlebitis or of abscess of the liver occurring, there can be no doubt. I have seen an old ulcer at the junction of the sigmoid flexure and rectum cause pylephlebitis forty years after the attack of dysentery which occasioned it.

The question of the etiology of liver abscess is not yet settled. General hepatitis is not a common or a necessary antecedent to the formation of a liver abscess. Did general hepatitis play a part in the formation of a tropical abscess, it is unlikely that the pus would be confined to one spot in the liver; multiple abscesses would be the rule. The so-called pre-suppurative stage of hepatitis in the history of the formation of a liver abscess is a misnomer, and the exhibition of ipecacuanha to control the

hepatitis is not a rational explanation of the good claimed for ipecacuanha in this respect. The prevention of the formation of liver abscess by the exhibition of ipecacuanha, if it does thus serve, cannot be by controlling a general hepatitis, for it seldom exists as an antecedent to tropical abscess. The explanation, if such is feasible, may then be sought in the action of ipecacuanha upon the bowel contents or upon the ulcerated surfaces; but this is a matter of mere speculation, for there is no surety or even credence that ipecacuanha, more than castor oil or Epsom salts or milk, has any effect in preventing liver abscess.

DISCUSSION.

Dr. J. L. MAXWELL (Formosa) said: I venture to doubt the relation which Mr. Cantlie has suggested of recurrent dysentery and the habits of Western races in matters of defaecation. It is a pity that more attention is not paid to the habits of Eastern races before theories are enunciated, such as we see frequently in medical journals—for instance, that the frequency of piles is due to the abnormal position assumed in defaecation. I would point out that among the Chinese piles are quite as common as among Western races, and, curiously, the affection is much commoner amongst men who defaecate in the so-called natural position than it is among women who adopt a method approximating to the Western practice. I would like to ask Mr. Cantlie what was the form of tubes that he used for dilatation of the sigmo-rectal pylorus. With regard to the surgical treatment, I should have been glad to hear Mr. Cantlie deal with the question of excision of the sigmo-rectal pylorus, which, if his theory is correct, is evidently the operation of election; the operation would be a very severe one so low down in the intestinal canal. The serious objection to opening the colon at any point is that a faecal fistula is produced which afterwards may cause considerable difficulty in closing. The new operation of appendicostomy is not open to this objection, and deserves a thorough trial.

Dr. CARNEGIE BROWN (London) said it was no doubt true, as claimed by Mr. Cantlie, that acute dysentery was very rare in patients who returned to this country after a long residence in the tropics. Chronic dysentery, especially the amoebic variety of the disease, was, of course, a very common condition. But colitis, either acute or recurrent, as seen in people who had never been out of Great Britain, was indistinguishable from most of the cases of dysentery which one saw in hot countries. In many instances, too, it was amoebic; and when careful search was made, as in a recent case of dysentery and liver abscess reported from Birmingham, entamoebae could be demonstrated both in the intestinal contents and in the liver. If these cases occurred in a country where dysentery was endemic they would invariably be diagnosed as dysentery. Nor could he agree that in recurrent tropical dysentery the sigmoid was almost invariably the preferential seat of disease, and he found himself in direct opposition to the statement that the sigmoid was in most cases stenosed. The result of examination of a very large number of specimens, both fresh and in pathological museums, was conclusive on both points; in tropical dysentery the proportion of cases in which the disease process specially affected the sigmoid was about 10 per cent., and general stenosis was very rare indeed. The pencil-like feeling of the lower intestine through the abdominal wall, which had been described, he had never encountered. Although stenosis occurred in the sigmoid, as in other segments of the bowel, from the contraction of cicatricial tissue over healed ulcers, the usual condition was dilatation; and, although the wall of the bowel was often enormously thickened, the lumen of the canal was generally unaltered, and not infrequently it was enlarged. With regard to what Mr. Cantlie had said about the absorption of nourishment when milk was the sole diet, the careful analyses of Schmidt and Strasburger in Germany and of Vaughan Harley and Goodbody in England, showed that, although the casein was partially undigested, about 50 or 60 per cent. of it by weight was completely absorbed, and it was not the case that the patients lived only on the whey. Why, if that were so, did they always increase in weight? He agreed that meat and milk should not be given together. Lacto-bacillin was discredited simply because it was not properly employed. The dried forms—tabloids, etc.—were useless, and the only proper way to make soured milk was to prepare it by fresh subcultures, as was done by peasants in Bulgaria and elsewhere. That was by far the easiest, and, indeed, the only rational way of using this most valuable method of treatment. His experience of it in sprue had been to show that the effects of a milk diet might be obtained in this way without keeping a patient in bed. None of the operative procedures was free from the grave objection that a serious operation—one which was attended by enormous fatality—was undertaken to relieve what was by no means a hopeless or even dangerous condition.

Dr. ALLAN H. HANLEY, C.M.G. (Dublin), said: I have had a large experience of acute dysentery. In one epidemic amongst natives in Southern Nigeria practically 50 per cent. of those affected died. The whole colon from caecum to sigmoid was equally affected in 88 *post-mortem* examinations I performed in three months. All forms of treatment appeared to be futile. As regards injections, I fear the fluid injected but rarely passed the splenic flexure. I certainly think that in these cases operative treatment, whether appendicostomy or right inguinal colotomy, might have been attended with some success. As I did not know what to do in the way of treatment I performed a right inguinal colotomy, but unfortunately the patient died almost at once.

Dr. R. A. CARTER (British Guiana) said: In treating cases of chronic recurrent dysentery distinction must be made between acute and chronic dysentery, the latter requiring almost quite a different form of treatment. With regard to injections, I have found injections of very weak solutions of nitrate of silver most useful. These injections should be copious and given at least three times a day. With regard to drugs, I have found antiseptic intestinal drugs, a mixture such as beta-naphthol, soda bicarb. and salol, to give good results, and with regard to diet, chicken-tea with intervals of milk and eggs. With regard to the cedar pencil size of the large intestines, when I have come across this condition the other portions of the large intestines have not been diseased.

Captain GORDON TUCKER, I.M.S., said: Men who collect from various parts of the world to discuss dysentery from their own experience should remember that they may be discussing different things which have the same name. For instance, those who have had great experience of dysentery as seen in China or Japan may be unacquainted with dysentery as met with in India. There are cases of chronic dysentery in Bombay City and the Bombay Presidency which resist all medicinal treatment and invariably end in death. They are not common, as most cases of Indian dysentery respond to treatment by ipecacuanha when given in proper manner. The residuum, however, have special features, as seen *post mortem*. There is no question of the ulcers being localized or exaggerated at any particular flexure. They exist in numbers from caecum to anus. The ulcers are of the size of a rupee or more, and covered with long tags of sloughed mucous membrane. The muscular coat is indurated, the induration being due, as seen in microscopical sections, to marked round-celled infiltration between the muscular fibres. The peritoneum is congested or inflamed. There may be sacculi of the bowel due to peritoneal adhesions, and sometimes a faecal abscess may be met with about the splenic flexure. The whole large bowel, therefore, is an indurated pus-containing tube and cannot function. Any severe operation is out of the question. Such patients have little or no resistance. Even an appendicostomy is a serious matter. I have only had personal experience of five operations; one patient died from shock; a second did well for eight days, developed pneumonia, and died on the tenth day. Though the result was unfortunate the case was valuable, as the whole large bowel was obtained at the autopsy. The condition of the abscesses showed a marked result from the eight days of irrigation. From caecum to anus they were clean, and showed none of the tags of sloughed mucous membrane on their surfaces. Some of the caecal ulcers were beginning to heal in from their edges. The remaining three desperate cases recovered, and put on flesh so rapidly that they were not recognized on returning to hospital to show themselves. It would appear, then, from these very few cases that the operation has a promising future in those very severe cases of chronic dysentery which resist all treatment—dysentery of the

type which I would prefer to call "chronic sloughing colitis."

Dr. J. HERBERT SANDERS (Hong Kong) said: The point necessary to keep in view is the relief of the patient, and in these recurrent chronic cases, how can we give them the most relief? Is it advisable to order them home into a temperate climate? The weak patient on the journey home would find much relief by washing out the lower bowel with warm fresh salt water. Rest and careful diet has, in my experience, given relief to the patient, but I have not found any case where one could say a permanent cure had been effected. The excision of the large bowel in these weak cases is, in my opinion, unjustifiable, and the only thing in the present condition of our knowledge is the washing out of the large bowel with some form of lotion.

Fleet Surgeon J. LLOYD THOMAS, R.N., said: The treatment by washing out the lower bowel by the systematic and most careful use of warmed salt water is, first, followed by great relief, and, secondly, by the feeling which follows the use of an ordinary hot-bath, and that is great comfort. Medical men should handle the enemas themselves when practicable, and that always with a gloved hand, for the condition of the patient requiring this treatment is generally one of much debility—of a neurotic condition—and rough handling is greatly resented. A long and not too small a tube should be used, so as to reach the higher lengths of the lower bowel.

LIFE-HISTORY OF ANKYLOSTOMA DUODENALE.

By A. T. OZZARD, M.R.C.S.,

Government Medical Officer, British Guiana.

AT the present day there is no agreement as to the true life-history of this parasite. Manson, in his latest edition of *Tropical Diseases* (pp. 715-16), mentions that

> Giles holds that *Ankylostoma duodenale* may become sexually mature while outside the human body and in the free state; in other words, that it is heterogenetic, an abundant supply of food favouring non-parasitic multiplication. His observations, supported by Ozzard, Annett, Ross, and Sandwith, are opposed by Looss, who points out that probably other free-living nematodes have been mistaken for the species in question; that, in fact, the illustrations in Giles's report represent three males belonging to different species,* and characterized by an entirely different configuration of the posterior extremity.

Daniels, in his latest edition of *Laboratory Studies in Tropical Medicine* (p. 349, second edition), states that the eggs, if allowed to escape into the earth,

> undergo further development, but do not become sexually mature or reproduce outside the body.

Brooke, in his *Tropical Medicine* (pp. 128-9), says that Giles states that

> He was able to hatch out embryos on sand from ankylostome ova, and that he obtained adults from these, which were different from the ordinary intestinal species. This would seem to show that the parasite may have an extracorporeal life-cycle, with possibly two forms of development, as in the case of *Rhabdonema strongyloides*.

Obviously, therefore, there is a considerable diversity of opinion on the subject, and I am unaware that it has yet been satisfactorily settled.

So long ago as 1900 I followed Giles's methods of endeavouring to cultivate the ankylostome outside the human body, and, after a certain amount of trouble, I satisfied myself that this could be done, and that therefore the *A. duodenale* is heterogenetic.

I published a short note of my results in the *British Guiana Medical Annual* for 1902, and gave some very rough sketches therein. I am in the unfortunate position of not being able to see any of the original articles or any illustrations of Giles, Looss, or any one else. In fact, I have seen no illustrations beyond my own.

Dr. Wite, the Government Bacteriologist for British Guiana, has most kindly taken the trouble to photograph some of my specimens, and these I now produce in the hopes that such may help to settle the matter one way or the other. I also bring forward some of my original slides prepared so far back as 1900. I recapitulate, with apologies, my notes in the *British Guiana Medical Annual* for 1902:

A small quantity of the dejecta, known to contain only the ova of *Ankylostoma duodenale*, is mixed with about three or four times its bulk of water and poured on the surface of some sterilized river sand in a suitable vessel. This latter is covered over with a piece of glass. Every day a small portion of the faecal layer was placed on a glass slide, a smear preparation made, and examined under a low power of the microscope.

At the ordinary temperature of the air here the embryos usually hatched out within twenty-four hours. During the rainy season, however, when the temperature is lower, they sometimes take a week before hatching out.

In emerging from the egg the embryo measures roughly from $\frac{1}{117}$ in. to $\frac{1}{100}$ in. in length by $\frac{1}{800}$ in. in breadth. At this stage they show little else than an intestine and oesophageal bulb. They now increase rapidly in size and length, and undergo numerous ecdyses. Giles says that ecdysis takes place roughly about twice in the twenty-four hours. And, as far as I could make out, this represents the case very fairly. The embryos developed into free sexually mature worms in from eight to ten days in my cases. The eggs in the free female worms are exactly similar in size and shape to those of the parasitic form. The size and shape of the free sexually mature worms are, however, very different to those of the parasitic form, being very much smaller generally.

That so few observers have accepted this view of the heterogenesis of *Ankylostoma duodenale* I can readily understand. To endeavour to cultivate them in sterilized vessels and on sterilized sand is practically asking them to survive and reproduce their species on almost nothing at all. Giles states that he was first led to experiment on these lines by having accidentally come across some apparently sexually mature worms in some ordure he happened to examine. Obviously one would expect to be able much more easily to cultivate them on ordinary earth than on sterilized sand; but then, of course, the objection would be at once raised that these were some other naematode worms.

Professor Looss (according to the quotation from Manson's book already quoted) points out that the illustrations in Giles's report represent three males belonging to different species and characterized by an entirely different configuration of the posterior extremity. I deeply regret that at the time of my experiments I made no special drawings of the males. As a matter of fact, I concluded that Giles had proved his results, and that they were accepted. I was simply trying to satisfy my own curiosity.

Any one examining the photographs and specimens of the free sexually mature female adult forms will be at once struck by the very close resemblance of the contained eggs in the uterus with the eggs of *Ankylostoma duodenale* as passed from the human body. The similarity between the two is very striking, and cannot be ignored. If this be not a free sexually mature female *Ankylostoma duodenale*, what naematode worm is it?

It is absurd to attempt to describe these as *Rhabdonema strongyloides*. As I pointed out in my note in the *British Guiana Medical Annual*, the two are quite different in appearance and the number and shape of their eggs. In the free female forms of *Ankylostoma duodenale* the ova are arranged in a single row, and are of an oval shape and usually from six to ten in number, whereas in the female *Rhabdonema strongyloides* the ova are arranged in a double row, and are somewhat rhomboidal in shape and usually in far greater numbers than those of *Ankylostoma duodenale*. I speak of the free-stage adults, of course.

The preparation of faeces from which I obtained my specimens I kept for months, and could at any time (after their first free-stage generation) obtain specimens at all stages of their growth, from the eggs to the adult forms.

If, therefore, it be subsequently proved that there is such a free-stage existence for *Ankylostoma duodenale*, one can the more readily understand how easily the disease ankylostomiasis and infection with *Ankylostoma duodenale* becomes so widely spread amongst human beings. One infected stool dropped on suitable soil would become capable of spreading over a very wide area of ground, to be, in all probability, subsequently travelled over by various people, who, if barefooted, would hardly escape picking up the larvae on their naked feet. Some of the photographs give an idea of the extraordinarily large number of these larvae in a very minute bit of faeces.

Giles states that he only once was able to develop the *Ankylostoma duodenale* in water, and that was a sample of very foul water. It is perfectly true that some of the eggs will hatch out into larvae in water, but these larvae very soon cease to exist and development no further goes.

*One of these species might well be *Necator americanus*.—A. T. O.

DISCUSSION.

Dr. C. W. DANIELS (London) pointed out the great importance of the question raised, because prophylactic measures that would be of value if no heterogenesis occurred would be useless if this took place. Most observers (and many had repeated similar experiments) reported that though they found considerable development occurred, yet even when they kept alive the embryos for months with abundant nutriment, they got no traces of sexual organs. He hoped that those with opportunities would repeat these experiments so that this important question might be finally settled.

ETIOLOGY AND PATHOLOGY OF "ENDEMIC FUNICULITIS."

By ALDO CASTELLANI, M.D.,

Director of the Clinic of Tropical Medicine, Colombo.

FOR many years a peculiar suppurative condition of the spermatic cord has been known to the Ceylon practitioners, some of whom published cases of it as far back as twenty years ago. I may mention the cases reported by Dr. Geo. Thomasz, Dr. Garvin, and several others, who indicated the condition under the name of "corditis" or phlebitis of the cord. The condition was considered by some to be of filarial origin; by others to be of venereal origin. Some practitioners considered the disease to be a malarial affection. The condition was investigated by me in 1904, and more completely, at the request of Dr. C. Paul, in 1907. I came to the conclusion that the disease had sufficiently characteristic symptoms to be considered a separate disease, for which I proposed the name of "endemic funiculitis." Madden, in Egypt, being unaware of the Ceylon local publications, described, in 1907, the same malady under the name of "cellulitis of the spermatic cord." The most important publication on the subject is the recent one by Coutts. For the description of the malady I refer the reader to Madden, Coutts, and my own publications, but a few words on the clinical aspect of the condition may not be out of place here.

The onset is generally abrupt; the patient complains suddenly of severe pain along the cord and the epididymis. As a rule, there is fever, and the general condition becomes rapidly worse. At the physical examination it will be seen that the inguinal region is occupied by a large cylindrical swelling in the direction of the cord, very painful on pressure. The skin is not affected. In most cases the epididymis is somewhat enlarged and tender, while the testicle proper appears to be normal. On examination of the penis and scrotum no ulcers are found, no signs of gonorrhoea, and no signs of any traumatic origin. As a rule, the disease has no tendency to spontaneous cure. If an operation is not performed in time, a general septicaemia develops; the skin of the patient becomes jaundiced, cutaneous haemorrhages appear, the fever is of an intermittent or remittent type, and the patient dies in a few days. Very occasionally, however, mild cases may be met with which recover spontaneously. A chronic type, to which special attention has been called by Coutts, also exists.

Pathology-Etiology.

The results on the investigation of the morbid anatomy and histo-pathology obtained by Coutts and myself agree in the essential points. The whole of the spermatic cord is highly inflamed and infiltrated; the circumference of the cord may be as much as 3½ in. On making a transverse section, yellow creamy pus will exude from the opened veins of the pampiniform plexus as well as from the vas deferens. The inflammation often extends to the epididymis, while the testicle proper is normal. Some clear fluid may be present, however, in the tunica vaginalis. At the *post-mortem* examination of these cases in which an operation has not been performed in time, the lesions found are those of other septicaemic processes. The skin is jaundiced, and may present petechiae, the lungs often show hypostatic congestion; the heart is flabby, and subpericardial haemorrhages are often seen. The spleen is enlarged and soft; the liver is generally enlarged, and may show fatty degeneration or cloudy swelling. The kidneys are often congested.

Histo-pathology.

The microscopical study of the sections of the cord will show the veins of the pampiniform plexus, dilated and occupied by pus cells, or by thrombi; a cellular infiltration of all the coats, as well as a perivascular infiltration, is present. According to Coutts and my own researches, the type of infiltration is mostly mononuclear. The vas deferens also is in many cases occupied by pus, or may be occupied by a cellular granulation tissue; its membranes and various muscular coats show a diffuse cellular infiltration.

Etiology and Pathogenesis.

My recent researches confirm the result of my previous investigation. Taking my old and new cases together, in 98 per cent. of my cases a diplo-streptococcus was present in the pus of the veins of the pampiniform plexus; in two *post-mortem* examinations the same germ was found in the blood of the heart, and during life it has occasionally been isolated from the blood of the general circulation in septicaemic cases. I have isolated various strains of this streptococcus; they all agree in one character—namely, they are decolorized by Gram's in sections of the tissues and in smears from the pus, while preparations made from cultures decolorize incompletely, and some cultures may even be Gram-positive.* Other germs, as is well known (strains of meningococcus), may present this same peculiarity—namely, of being Gram negative in preparations from the tissues, and Gram-positive in preparations from cultures. In smears made from the pus, and stained with methylene blue, the cocci are often arranged in pairs, and may show a gonococcus-like appearance. The principal characters in culture media are as follows:

Agar.—The growth is very delicate, but some strains may grow fairly abundantly, the colonies occasionally coalescing together.

Gelatine.—Same characters as in agar, only more delicate. A few strains do not grow on gelatine.

Broth.—In some cases, general turbidity; in others the medium remains clear, while some sediment may be present.

Pepton-water.—Very scanty or no growth at all.

Milk.—The milk is rendered acid.

MacConkey's agar.—No growth.

Serum media.—Nothing characteristic.

Sugar media.—The reactions vary. Most of the strains I have isolated lately give the following reactions:

Glucose broth	Acid.
Lactose broth	Acid.
Maltose broth	Acid.
Saccharose broth	Acid.
Saccharine broth	No change.
Mannite	No change.
Bulcite	No change.

The germ I have described, therefore, cannot be distinguished from the usual strains of *S. pyogenes*, except, perhaps, by its being Gram-negative in preparations made from the pus or sections of tissues. Does this germ play any rôle in the etiology of the disease? I am now inclined to give it more importance that I was at first willing to do; the constant presence of the germ being somewhat suggestive. If this germ plays an etiological rôle, which is the pathogenesis of the malady? Coutts states that the micro-organism is often found in the urethra of natives, and he regards the suppurative condition of the cord as due to the extension of an infective process from the urethra by way of the vas deferens. To a certain extent, I can confirm Coutts's opinion, having found the organism in the urethra of 2 patients suffering from endemic funiculitis, and presenting an extremely mild catarrhal inflammation of the urethra of non-gonorrhoeal origin. I have, however, not found it in 6 other cases specially examined. A certain importance as predisposing cause must be given to a sudden chill, and, perhaps, some slight traumatism. In almost all the Ceylon cases the disease begins abruptly after the patient taking a cold bath when feeling tired. A few patients give a history of having made an effort in lifting a weight, such as a big stone, etc.

CONCLUSIONS.

1. The etiology of endemic funiculitis requires further investigation, but it is probable that the micro-organism described by me, and the presence of which in the disease

* In the paper I published in the *Lancet* (1908) it was stated by mistake that the germ was always Gram-positive.

has been confirmed by Coutts, may play an important etiological rôle—at least, in the suppurative state of the malady.

2. The micro-organism is a streptococcus practically undistinguishable from the usual strains of *Streptococcus pyogenes*, except by its being—at least, in my cases—Gram-negative in preparations made from pus and in sections of tissues.

3. As regards the pathogenesis of the disease, Coutts's opinion that the malady develops through an extension of a mild or latent urethral infective process, via the vas deferens, has many points in its favour.

4. A sudden chill, such as that given by taking a cold bath, and any kind of sudden traumatism, are probably important predisposing causes.

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DISCUSSION.

Mr. J. CANTLIE (London) said: I recently had under treatment a native of Ceylon—a man of middle age—who developed funiculitis for the first time whilst residing in London. The attack commenced with pain in the right groin, some swelling, and fever. The spermatic cord was enlarged and tender from the internal abdominal ring along the inguinal canal, and down the scrotum as far as the epididymis. The patient had fever and pain for four weeks, but at the end of that time the pain subsided, the swelling disappeared, and only an ill-defined thickening was left along the course of the spermatic cord. After an interval of six weeks the symptoms again appeared and continued for about fourteen days, when the parts became again fairly normal. There was no suppuration in this case, and I made no incisions into the swelling. The patient left for Ceylon apparently quite well.

IS PONOS KALA-AZAR?

By G. A. WILLIAMSON, M.A., M.D.Aberd., D.T.M.Liverp.,
Government Medical Officer, Larnaca, Cyprus.

THAT a very fatal disease, chronic in nature and occurring in epidemic waves, should be endemic solely in two small Greek islands is difficult to believe, and it is much more probable that its being regarded as a disease *sui generis* under the name of ponos is due to want of careful investigation with the aid of modern methods of research. The earliest full description of this disease is that of Dr. Yiannakopoulos, of Spetsai, in the Greek medical journal, *Galenos*, of September 8th, 1879, and nothing of importance has been added in later accounts. I have read this description in the original Greek, and most of the information quoted with regard to the disease in the following remarks is taken from it.

On the discovery of the Leishman-Donovan body in 1903, and the description of the symptoms caused by that protozoon, I was much struck by the resemblance of the disease to ponos, and wrote to Major Donovan and Sir Patrick Manson suggesting the possibility of kala-azar and ponos being the same disease, the answer being from both that probably splenic puncture would settle the point, but that the fact of ponos being apparently confined to young children was against the idea of its being kala-azar. In 1908 I was appointed by the Colonial Office to proceed to those islands to investigate, and made all preparations, pending a reply to an inquiry as to the presence of the disease; the reply when it arrived was that the disease had died out, and later information was to the same effect, so that unfortunately the expedition had to be abandoned—at least, for the time being. I wrote to medical men in those islands explaining the interest attaching to splenic or hepatic puncture in suspected or ascertained cases of ponos, and requesting them kindly to forward films for microscopical examination on opportunity offering, but no answer has been received; and so the matter stands at present, except that Dr. Andrew Davidson hints at ponos being possibly caused by the Leishman-Donovan body, although he says that it may appear extravagant to do so (Allbutt and Rolleston's *System of Medicine*, ii, p. 611).

That the disease is one caused by a micro-organism the following facts go to prove:

1. Although endemic, epidemic waves occur.

2. It is a disease characterized by fever.

3. Severe cachexia occurs after the fever has lasted some time.

4. Several cases occur in the same family.

The recent work of Nicolle in Tunis shows that a disease exists there with symptoms similar to those of ponos, and occurring amongst children as ponos does, and splenic and hepatic puncture has shown the presence of Leishman-Donovan bodies; this would suggest that a similar result would follow puncture in ponos; and if these cases in children are found only in Tunis and nowhere else in North Africa (as is apparently the case), the likeness to ponos is still more evident; both would be instances of locally confined kala-azar.

The Leishman-Donovan body in the Near East has been discovered in kala-azar patients in Arabia, Egypt, Tunis, and Algiers, and in Oriental-sore patients in Arabia, Tunis, Algiers, and Cyprus; thus, specimens obtained by me in a smear from a typical case of Oriental sore in a Cypriote who had never been out of Cyprus were recognized as Leishman-Donovan bodies, and Professor Ronald Ross and Dr. Stephens, of Liverpool, kindly corroborated the diagnosis; from this it is evident that the parasites are found in several countries bordering on the Mediterranean, and in Cyprus, so that from the geographical position of both Hydra and Spetsai it is probable that the climatic conditions would be equally favourable to the presence of the parasite there.

Definition of Kala-azar and Ponos.

Lieutenant-Colonel Sir W. B. Leishman defines kala-azar as a chronic and extremely fatal fever of an irregularly remittent type which occurs in epidemic form in Assam, and in endemic form in other parts of India and the tropics. It is characterized by great wasting, a progressive enlargement of the spleen, and a tendency to haemorrhages and dropsical effusions. It is associated with the presence in the spleen, liver, and other situations of a protozoan parasite, the biological position of which has not yet been definitely determined. In his book Dr. Andrew Davidson defines ponos as a disease of infancy and childhood, endemic in the Greek islands of Spetsai and Hydra, characterized by fever, enlargement of the spleen, cachexia and haemorrhages. Thus, leaving out the geographical distribution and the reference to causation in these definitions, we get the following referring to both diseases: A fever with cachexia, enlarged spleen, and haemorrhages.

COMPARISON OF THE TWO DISEASES.

Ponos.	*Kala-azar.*
Believed by all to be infectious.	Believed by all to be infectious.
Cause not yet discovered.	Leishman-Donovan body the probable cause.
Age: Infancy and childhood; rare in adults.	Age: A disease of all ages, chiefly young adults in India. A large proportion of children are attacked (Rogers). A large proportion of children are attacked in Tunis (Nicolle).
Endemic, with epidemic waves.	Endemic in India generally, epidemic in Assam.
Begins as fever, intermittent or remittent, finally always quotidian, and hectic after one or two weeks, but very irregular.	Begins as fever, intermittent or remittent, finally always continued fever in second stage; extreme irregularity of temperature in cachectic stage.
In early stage perhaps anorexia, debility, enlarged and hard abdomen; urine malodorous in early stages, this symptom disappearing in a few weeks or months.	Debility and gastro-intestinal symptoms.
Colour of body altered to straw colour. Sclerotics bluish-yellow.	Darkened colour of body in Indians, yellowish or greenish tinge in Europeans.
By second week spleen enlarged 1 in. or 2 in. below costal margin.	Spleen enlarged in initial attack of fever—that is, in two to six weeks.

Ponos.	*Kala-azar.*
Liver sometimes enlarged.	Liver enlarged frequently, but not constantly like spleen or to same extent.
Perverted appetite frequent—that is, children desiring wine or spirits or red caviare.	Perverted appetite frequent—that is, appetite for food of kind forbidden by their religion.
Catarrhal diarrhoea and cough. Dysenteric symptoms.	Diarrhoea and dysenteric symptoms.
Cachexia marked.	Cachexia marked.
Great debility; patient cannot walk.	Great debility.
Oedema of feet, face, and hands and side on which he lies. Ascites, but not common. Dyspnoea.	Oedema of feet and ankles, and may in later stages go on to ascites or pleural effusion. Transient oedema of face or trunk or limbs frequent. Occasionally oedema of legs.
No albumen in urine.	
Necrosis of bones of face, cancrum oris, frequent in latest stages.	Cancrum oris frequent in latest stages.
Haemorrhage very frequent in latest stages. Ecchymosis, petechiae, bleeding from gums, epistaxis, melaena.	Haemorrhage frequent in latest stages. Epistaxis, hematemesis, purpuric eruptions, ecchymosis, melaena, cerebral haemorrhage.
After spleen enlarged, fever paroxysms irregular, varying about 40° C., and later afebrile periods succeeded by paroxysms.	After spleen enlarged paroxysms irregular; later fever, followed by periods of apyrexia, the latter getting shorter till continued fever is set up. Fever most irregular in cachectic stage.
Spleen finally at acme of disease greatly enlarged, even to pubis and beyond linea alba, sometimes decreasing and again enlarging; diminution frequently accompanied by persistent diarrhoea.	Spleen subject to fluctuations in size, diminishing with severe diarrhoea.
Anaemia.	*Anaemia.*
Blood: leucopenia marked. Leucocytes so few that careful search had to be made to find them. (Exact study of blood condition is much required.)	Red cells 3,000,000 to 4,000,000 per c.cm. Colour index not much reduced, early leucocytes soon disappearing, followed by marked leucopenia. Relative and absolute decrease of polymorphonuclears and relative increase of large mononuclears. Leishman-Donovan bodies with difficulty found in blood, found in splenic and hepatic puncture readily.
Duration: chronic up to two years. Average, eight to eighteen months.	Duration: chronic, speaking generally, up to two years or more. First stage, one to three months; second stage, seven to twelve months; third stage, uncertain. Sometimes fatal within two months of appearance of disease.
Termination, generally bad. Seasonal prevalence, spring—that is, April.	Termination generally bad. Cold season or early hot season (Rogers).
Treatment: quinine in large doses—that is, 10 gr. quinine daily for ten days for child of 1½ years, then every second day for fifteen days.	Quinine in large doses (Rogers) for lengthened periods.
Good food and nursing.	Good food and nursing.
Treatment continued over six months.	Effect of quinine regarded as *nil* by some.

CONCLUSIONS.

In the foregoing I have endeavoured to omit none of the important symptoms of either disease, and I have not tried to force a likeness between the two diseases—the similarity shown amounts, I submit, to identity in all salient points; of course the crowning piece of evidence is wanting—namely, the finding of the Leishman-Donovan body in splenic or hepatic puncture in cases of ponos, but it is to be hoped that that will soon be rectified; and, at any rate, nothing but good can result from the present advancing of the theory of ponos being kala-azar, as this may be followed by accurate investigation, on the lines required, by medical men having access to cases.

The extraordinary disappearance of the disease from its two endemic centres still continues, no case having been seen, according to my latest information, for over a year.

DISCUSSION.

In the discussion which followed, Surgeon-General W. R. BROWNE, I.M.S., remarked upon the danger from haemorrhage likely to occur in splenic puncture. Dr. J. L. MAXWELL drew attention to the same danger; and Captain T. H. CAMPBELL, R.A.M.C., related a fatal case of splenic puncture in kala-azar, in which at the *post-mortem* examination there was found a tear in the spleen about ¾ in. long, in all probability occasioned by a deep inspiration as the needle entered the splenic capsule. Mr. J. CANTLIE drew attention to the presence of cancrum oris in ponos and kala-azar referred to by Dr. Williamson. The etiology of cancrum oris seemed a moot-point; he had seen it amongst children in England and amongst Indian soldiers in China, and it was known to prevail in kala-azar. If the cases he saw in China were due to Leishmaniasis, what was the cause of the disease in Britain? In regard to the distribution of the disease, Dr. J. L. Maxwell had seen it in Formosa, Dr. Stuart Brooke in India, and Dr. C. A. Stone in the Dooars, India.

BRONCHIAL SPIROCHAETOSIS.

By ALDO CASTELLANI, M.D.,
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IN 1904 and 1905 I observed in Ceylon two cases of a peculiar form of bronchitis characterized by the presence in the expectoration of enormous numbers of spirochaetes.* I described the condition in a paper which I published in the *Lancet* (May 19th, 1906). Later, I came across several other cases. Recently (see *Trans. Soc. Trop. Med.*, 1909) Waters has described numerous cases of bronchial spirochaetosis in India, dwelling especially on the acute type of the disease. Cases have been observed in the Philippine Islands by Jackson and others.

Spirochaeta bronchialis.

Two types of the disease, in my experience, may be observed: acute bronchospirochaetosis and chronic bronchospirochaetosis. In the acute type the patient has fever, feels weak, and coughs much, the expectoration being scanty and of a mucous character; but very often the general condition is not bad. Chronic bronchial spirochaetosis may follow on an acute attack, but very frequently, at least in Ceylon, the onset is quite insidious and slow. The patient has a chronic cough, which is frequently more severe in the morning; expectoration is not very abundant, and is muco-purulent in character; it is non-nummular.

In many cases, now and then, for periods of two or three days, and even much longer, the expectoration contains blood, this being intimately mixed with the muco-pus, and varying in amount. Sometimes attacks of genuine haemoptysis occur, one or two teaspoonfuls, or even more, blood being expectorated. In some cases there is no fever, in others a true hectic-like fever may be present; in some cases, however, the rise of temperature takes place in the morning and not in the afternoon, in others the fever is present only occasionally and is very irregular. The physical examination of the chest reveals very little

* Spirilla, or spirochaetes, have been occasionally seen in bronchial discharge long ago by several authors (Eichorst, etc.), but the parasites apparently were always present in very small numbers.

except a few dry or coarse moist râles. The general condition may remain fairly good for a long time, though a certain degree of anaemia is usually present. A few cases waste rapidly.

Course, Prognosis, Treatment.

The course of the disease is very long. The first case I observed in 1904 is alive, and his condition is very much better. The treatment with the ordinary expectorant mixtures, etc., is unsatisfactory; in chronic cases glycerophosphates and arsenic give somewhat better results.

Diagnosis.

The acute type is generally mistaken for influenza or malaria. The examination of the sputum in which no Pfeiffer's bacilli are found will distinguish the affection from influenza, and the examination of the blood will exclude malaria.

Cases of the chronic type, so common in Ceylon, presenting blood in the expectoration are generally diagnosed as phthisis. The examination of the sputum for tuberculous bacilli will be always negative, and the animal inoculation will remain without effect; the ophthalmo- and cuti-reactions are negative in the great majority of cases. Occasionally, however, cases of mixed infection—tuberculosis and spirochaetosis—occur; one such case has been described by Branch.

Spirochaetosis is easily distinguished from endemic haemoptysis by the examination of the sputum, which will show absence of ova of *Paragonimus westermani*.

Etiology.

In the expectoration enormous numbers of spirochaetes are found. In my article published in 1906 in the *Lancet* I distinguished several types in preparations stained by Leishman. My more recent investigation confirms those results. Four principal types of spirochaetes may be distinguished:

1. Very thick individuals from 15 to 30 microns in length, with irregular coils which vary in number but are never numerous; they generally stain blueish.
2. Spirochaete resembling the *S. refringens* (Schaudinn) with a few graceful waves and pointed extremities.
3. Thin, delicate spirochaete with fairly numerous small, uniform coils and tapering ends. Sometimes one of the extremities is blunt, while the other is pointed. This is, perhaps, the commonest type.
4. Extremely thin and delicate organisms with very few irregularly shaped coils.

There is little doubt, therefore, that under the name *Spirochaeta bronchialis* (Cast. 1907) there are several species, or at least varieties. Whether the spirochaetes found in the expectoration are the real cause of the condition cannot yet be said, but it seems to me not improbable that the spirochaetes present in such large numbers—sometimes unaccompanied, practically, by any other germ—may play an important etiological rôle.

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THE PATHOLOGY OF THE BLOOD IN VERRUGA.

By Fleet Surgeon P. W. BASSETT-SMITH,
Haslar.

I RECEIVED recently from Staff Surgeon A. J. Hewitt, R.N., a number of blood films kindly sent to me by Dr. Gastiaburú, of the Institute de Higiene, Lima, Peru, taken from two acute cases of verruga. As the literature on this disease is scanty, and the etiology of the condition very indefinite, a description of the characters shown in them may be of interest, more especially to those who may have the opportunity of visiting the endemic area.

The disease has apparently a very limited geographical distribution, being endemic in certain narrow confined valleys on the western slopes of the Andes, especially common among those working on the Oroya railway and district—hence, sometimes called Oroya fever. It is an infectious, inoculable disease, commencing with fever, more or less acute and prolonged, very malarial in character, attended with gastric pain, cramps of muscles, swellings of the joints, enlargement of the spleen, and progressive anaemia; from one month to a year after the onset there is a characteristic granulomatous eruption, with a great tendency to haemorrhages. The eruption is not restricted to the surface, but also affects the mucous membranes and internal viscera. The disease affects both natives and white residents, the mortality varying from 10 to 40 per cent. Sir Patrick Manson describes it as an aggravated form of disease in some respects closely resembling "yaws." The disease has long been known in the endemic area, being described as early as 1543 by Augustin Zarati, in his history of Peru. There is little doubt that "verruga" is a specific infective disease, not highly contagious, but inoculable from man to man; according to native belief the virus is waterborne. Firth, however, suggests that the affection may be due to the entrance of some organism by the skin in those intimately in contact with the soil, notably among those whose work necessitates the handling of mud or earth.

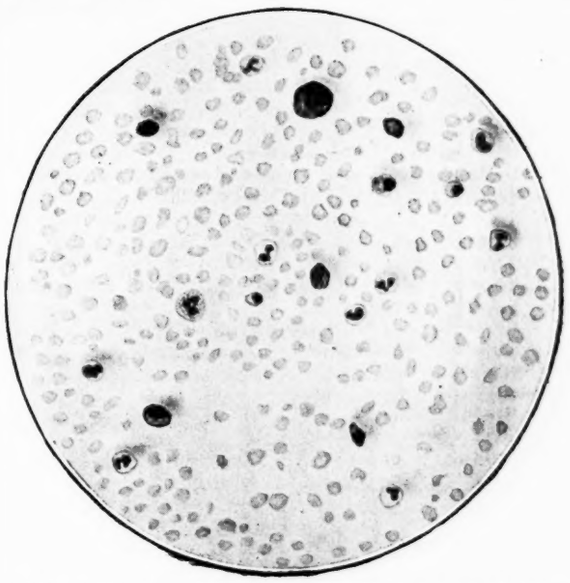

Fig. 1.—Verruga, acute case. Actual field as seen under ⅓ objective. Great irregularity in the red cells, and three nucleated forms.

Isquierdo has described a long-headed bacillus as being common in the morbid growths and adjacent vessels. In chronic cases the blood films show the evidence of pronounced anaemia, in acute forms the red blood count is frequently as low as one million, falling even to 400,000. The twenty films which I have had the opportunity of studying were taken from two acute cases, and are very remarkable.

The main features are those of an intense anaemia with an extraordinary abundance of nucleated red cells, and a relative high leucocytosis, not unlike the condition found before death in fatal infections of trypanosomes in rats. There was a complete absence of any large protozoal organisms, either malarial or flagellate.

Generally speaking the red cells showed very great variations in size, large pale macrocytes, small denser contracted microcytes, being fairly common; irregularity of shape was very marked, seen as pyriform, reniform, oval, or crenate forms; great irregularity of staining, as polychromatophilic changes, with frequently abundant fine or coarse basophilic stippling, the very large and very small red cells showing most chromatic changes. The "nucleated reds" were mostly of the normoblastic type, but large megaloblasts with badly stained protoplasm round the nucleus were seen, and occasionally microblasts were found. Many of these cells showed basophilic granules.

The abundance of nucleated reds in some of the films was remarkable, and in no specimen have I seen so great a variation in the character of the nucleus—single and round, sometimes very small, from one-tenth the diameter

of the red cell, in all graduations, up to a well-stained circular ordinary form; double and treble nuclei were common; quatrefoils and cinquefoils were seen, as well as

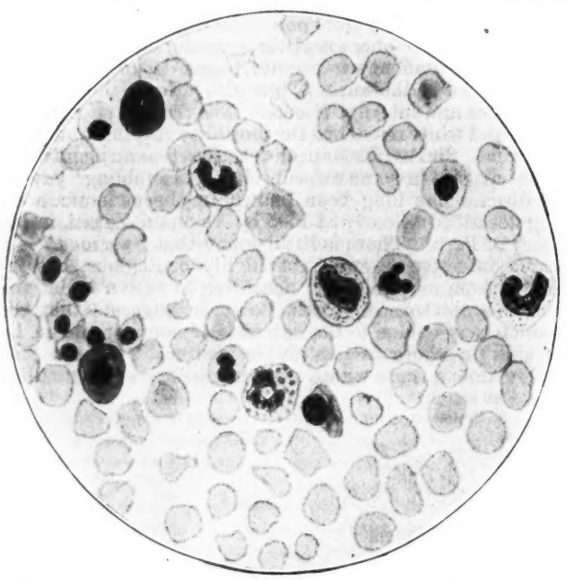

Fig. 2.—Verruga, acute case. Actual field as seen under $\frac{1}{12}$ objective. Nucleated reds very abundant.

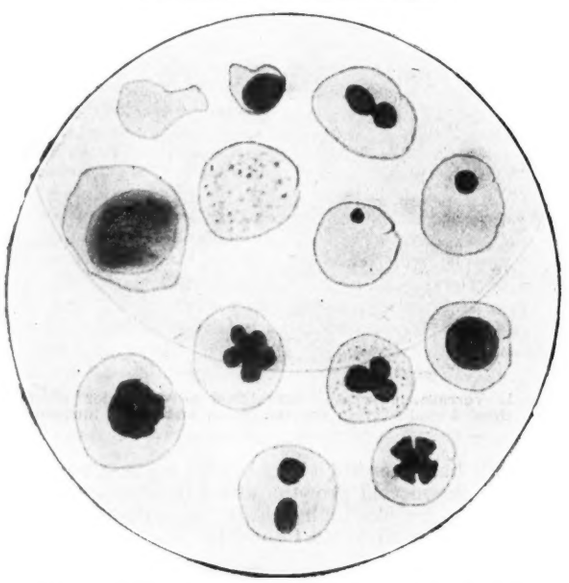

Fig. 3.—Verruga, acute case. Forms of nucleated red cells.

rosette-like appearances. True mytosis of the nucleus was also seen.

Changes in the White Cells.

I have no total white counts to record, but there is an undoubted relative leucocytosis with a slight increase in the large mononuclears, the eosinophiles being rather high. A few myelocytes were found, about 0 5 per cent. While

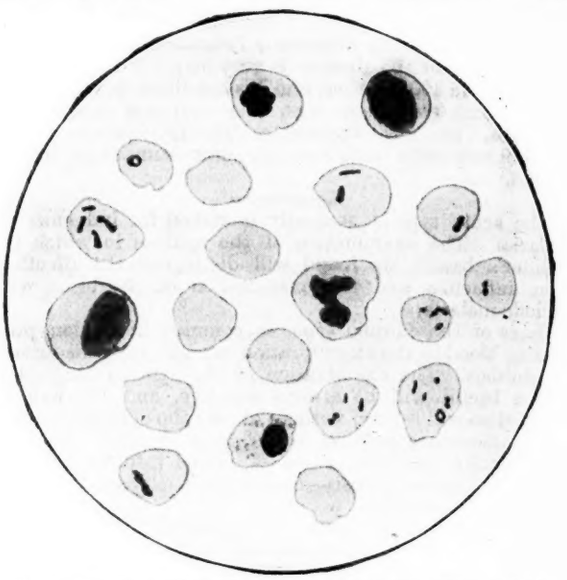

Fig. 4.—Verruga, acute case. Blood film as seen under a high power showing nucleated reds and intracorpuscular bodies.

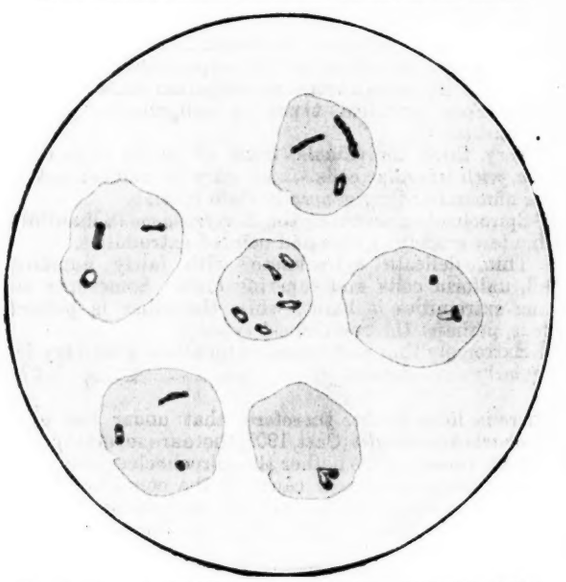

Fig. 5.—Verruga, acute case. Forms of intracorpuscular bodies under $\frac{1}{12}$ objective.

counting the white cells the nucleated reds were also enumerated, and the percentage to the total white cells is given.

Number.	Polymorpho-nuclears.	Large Mono-nuclears.	Small Lymphocytes.	Transitionals.	Eosinophiles.	Myelocytes.	Nucleated Reds.
	per Cent.	per Cent.	per Cent.	per Cent	per Cent.	per Cent.	per Cent.
1	67	7	21	3	2		24
2	70	7	19	2	2		14
3	66	7	20.5	2	4	0.5	13
4	65	7	21	2	4	1	8
5	68	10	17	2	2	1	8
6	65	10	18	2	4.5	0.5	9
7	66.5	8	21	1	3.5		6

Other changes are also observed in the red cells, particularly in those films that have been deeply stained by Giemsa. Besides the metachromatism and the basophilic granules in the cytoplasm there are seen in many cells minute rod-like bodies, frequently showing as diplococci from the intense staining of the ends, or as beading from two or more of these lying end on; occasionally small deeply-stained rings or pyriform bodies could be made out; I was unable to detect any red chromatin spots. Many were often present in a single cell, but sometimes only one would be seen. Though the corpuscles containing these bodies frequently showed chromatin changes and irregularities of shape, it is not certain that they are the effects of degeneration of the protoplasm, as they look entirely different from the ordinary basophilic granules of anaemic blood; they suggest rather extraneous pathological bodies causative of the degeneration, but before any conclusion is come to as to their nature a detailed study of a large number of fresh specimens should be made to see if their presence is constant in all acute cases.

The symptoms of verruga, its limited distribution, specific nature, and the profound alteration of the blood, make it highly probable that the cause may be an intracorpuscular organism, but which not unlikely is very minute and difficult to stain.

SECTION OF PHARMACOLOGY AND THERAPEUTICS.

Professor RALPH STOCKMAN, M.D., F.R.C.P.Edin.,
President.

DISCUSSION ON SPINAL ANAESTHESIA.

OPENING PAPERS.

I.—GEORGE CHIENE, F.R.C.S.Edin.,
Assistant Surgeon, Royal Infirmary, Edinburgh; Lecturer on Surgery, School of Medicine, Edinburgh.

MR. GEORGE CHIENE, after thanking the Committee of the Section for asking him to open the discussion, proceeded as follows: In an assemblage such as this it is hardly necessary for me to remind you that although Corning was the first to suggest spinal anaesthesia, it is to Bier that the credit must be given for putting the method on a practical footing. Cocaine was the drug employed, but the results were by no means satisfactory, and Bier himself suggested that the matter should be dropped until a less toxic drug was discovered.

Notwithstanding considerable opposition, and the fact that the method was to a great extent given up in Germany, Tuffier continued its use until 1904, when Fourneau introduced stovaine, which again brought spinal anaesthesia prominently before the profession. Cocaine is now practically given up, although Chaput combines it in small doses with stovaine. Recently Murphy has stated that:

> The mortality of spinal analgesia is such as to cause it to be abolished as an analgesia of choice, indeed, if not sufficient to cause statutory enactments against its use.

He quotes in support of this statement the statistics given by Strauss, and compares the results stated there with the results obtained by himself, the Mayos, and Oviatt by the open ether method. A statement such as this demands our careful consideration, and I admit that, when visiting the Mayos and other clinics in Canada and America three years ago, I was much struck by the results obtained by the open ether method, and have frequently employed it since; at the same time, I will be much surprised if this discussion does not bear out what many believe to be the case—namely, that under certain circumstances we have in spinal anaesthesia a most valuable addition to the various methods of anaesthesia already in use.

I propose, with your permission, to suggest the lines on which this discussion should proceed, and hope for some definite findings regarding the points raised, although many questions, fully discussed elsewhere, must necessarily be omitted.

With regard to the question of the drugs at present employed, and the amount injected, the following points appear to me to be of importance: (1) Which is the safest and at the same time the most effective drug to employ? (2) Is the addition of adrenalin chloride an advantage or a disadvantage? (3) What effect has the addition of strychnine to stovaine or other similar preparations? (4) Has the amount of the drug injected a definite relationship to the unfavourable symptoms which have occasionally been noted?

The question of the patient's position during and after the injection is still one on which there are differences of opinion. Barker's technique must be considered, and the further question of the possibility of withdrawing the drug after a sufficiently high anaesthesia has been obtained, with a view to preventing unpleasant and possibly dangerous after-effects. Points of minor importance are the forms of needle employed, and whether the puncture should be made in the middle line or to one or other side. The middle line is now almost universally employed.

With regard to the advantages and disadvantages of spinal anaesthesia compared with other methods, we have to consider not only the immediate but the remote results, and to look at the question from both the surgeon's and the patient's point of view. In comparing the results and the comparative mortality we are at once met with a difficulty—the question of statistics, which, it has been said, can be made to prove anything.

By combining spinal anaesthesia with scopolamine-morphine injections have we not a method which obviates many of the disadvantages of which spinal anaesthesia is accused?

In the conclusions I am about to submit regarding the various propositions I have brought forward I propose to combine my own experience with the results obtained from the study of the literature of over 12,000 reported cases.

Choice of Drugs.

To commence with the question of drugs, I have used a 10 per cent. solution of stovaine in normal saline solution, as recommended by Tuffier, and have injected doses from 1½ c.cm. in a child 5 years of age to 8 c.cm. in adults. The results of my early cases I published in January, 1906, and since then many other cases have been published in this country, in the majority of which stovaine was the drug employed. Of the other drugs in use, tropacocaine has been strongly advocated by many authorities, especially in Germany. With regard to this point, it is interesting to note that in 1903 Silbermark gave up tropacocaine, as he found that it was less efficient than similar drugs at his disposal at that time. The third drug which is now comparatively frequently used is novocain, which some authorities consider to be more satisfactory than either of the others mentioned. Certainly, if we compare novocain with stovaine as a local anaesthetic, we find that novocain is less injurious to nerve structures, and a similar argument ought to hold good intraspinally, although the clinical reports hardly bear this out. In comparing the reports of the action of the various drugs one has to take into consideration the relative number of cases in which each has been employed, and certainly up to the present time stovaine has been used more frequently than any other drug. Good and bad results have been obtained with all.

It is of interest that the German school now chiefly advocates tropacocaine, whereas the majority of the French school are still in favour of stovaine. Investigations are still being carried out in many laboratories, and there is promise that a safer synthetic preparation may yet be found. With regard to the addition of adrenalin, I have personally never used it in spinal anaesthesia, and there appear to me to be distinct disadvantages in doing so, although a mixture of novocain and adrenalin has been strongly advocated by E. Küster and others.

Spielmeyer's histological examination of the nervous system of 13 patients who have died after spinal injection, along with his experiments on animals, are of interest, although they are not sufficiently numerous for final deductions to be made. Six of the cases, however, in which small doses had been administered showed no degenerative changes. Jonnesco and Jiano (Bucharest), at the International Surgical Congress last year, reported a series of cases in which stovaine and strychnine combined were used. They are strongly of opinion that this method gives a perfect anaesthesia, and they inject the solution at various parts of the cord. They report 14 cases in which the injection was made in the cervical and upper dorsal region. The doses of stovaine varied from 0.02 to 0.04 cg., and of strychnine 0.5 to 1 mg. I have been able to find only one record of the same method by Mr. Canny Ryall, who has recently been working with Professor Jonnesco, and speaks very highly of it. Should these excellent results be maintained, this appears a distinct advance.

Two cases of death have been reported, one by Chaput and the other by Dönitz, which seem to point to a definite relationship between the amount of the drug used and the fatal termination; but, on the other hand, we find deaths or severe symptoms reported after a moderate dose, and symptoms, which would have been put down to the toxic effects of the drug, have in some cases developed where no injection had been made. H. Wolff reports a case in which an attempt was made to operate under spinal anaesthesia, but, although no drug was injected, abducens paralysis of the right eye occurred on the fifth day. In a case in which I attempted to produce spinal anaesthesia a result somewhat similar occurred. Owing to the needle

becoming blocked no drug was injected, and a general anaesthetic was employed. Occipital and spinal neuralgia followed. In another case—a compound fracture—spinal anaesthesia was suggested. Fortunately I decided it was not necessary, and the next day the patient developed peculiar nervous symptoms, from which he completely recovered. Had spinal anaesthesia been used the symptoms would most certainly have been attributed to it.

The Technique.

The most convenient position for the injection of the drug is to make the patient sit up and arch the back, and this is the method that I have always employed, but it has been shown that when the patient is laid on one side the anaesthetic affects that side more than the other, and therefore the lateral position may be an advantage in some cases. Following the injection various postures have been recommended. I lay the patient flat on the table with the head slightly elevated.

The Trendelenburg position still has its advocates, but this position is objected to, as toxic symptoms are more likely to develop, although Saradnicky has used this method in over 600 cases without any bad results. The position recommended by most writers is to keep the head and shoulders raised, and only to raise the pelvis until a sufficiently high anaesthesia has been obtained. Barker's experiments require careful consideration, and at first sight his method for limiting the action of the drug seems excellent, but when one analyses the reports of the cases the localization does not appear to be so uniformly accurate as one might expect, and some who use this method when they wish a high anaesthetic inject at a higher level, and vice versa, which seems contrary to the principles laid down by Barker. Melsner and Hambold, when sufficient anaesthesia has been produced, reintroduce the needle and wash out the lower part of the spinal canal with normal saline solution. This is done with a view to prevent further action of the drug. As far as I am aware, no one else has so far practised this method.

Comparison of Methods.

We now pass to the comparison of spinal anaesthesia with other methods. With regard to the death-rate, I have collected reports of over 12,000 cases, which include 22 deaths—roughly, 1 death in 570; but if we analyse the cases in which death occurred, we find that very few can be attributed solely, or even partially, to the anaesthetic.

If we consider the table compiled by Strauss, we find that 25 of the 46 deaths he reports occurred when cocaine was used, which works out at 21 deaths in 15,842 cases where other drugs were used, or 1 in 754, Only 3 of those are stated to be clearly due to the anaesthetic, 1 in 5,282, and 9 more seemingly in connexion with the anaesthetic, in all 1 in 1,320. Excluding 54 cases of grave collapse due to cocaine we find 38 cases of grave collapse in 15,842 cases, or 1 in 416. Comparing those figures with the results obtained in a similar number of cases of general anaesthesia, it will be seen that they are not so unfavourable as Murphy would have us believe.

As spinal anaesthesia occasionally fails, as the result, in some cases, of faulty technique, the patient should be prepared as for a general anaesthetic. In many patients the dread of the anaesthetic is infinitely greater than the dread of the operation, and, if otherwise suitable cases, those patients may have their minds relieved of this fear. During the operation the main objection as regards the patient is that he knows everything that is going on. With certain precautions, however, this can be avoided. Many surgeons object to operate with the patient in full consciousness, and in this connexion the combination of scopolamine-morphine with spinal anaesthesia is an advantage.

In the after-results of a successful case the comparison is, in my experience, greatly in favour of the spinal method, and in a ward in which the method is being used one finds that it rapidly becomes so popular that there is a general request for it. Patients who have experienced both methods usually prefer spinal to general anaesthesia, and those who have once submitted to the spinal method are quite willing to do so again. On the other hand cases have been reported in which the after-results are by no means so satisfactory. One of these, a medical man, in reporting his own symptoms finishes by stating that nothing would induce him to undergo spinal anaesthesia again unless the administration of chloroform was out of question. Some 30 cases of ocular paralyses have occurred as an after-result; the sixth nerve is most frequently affected and the condition usually comes on from the ninth to the twelfth day after the injection; the longest case on record lasted for six months, the average being about three weeks. All observers have noted cases of headache and spinal neuralgia and most are agreed that occasionally retention of urine is more troublesome than after a general anaesthetic. Respiratory paralysis, paraplegia and meningitis have also been noted in a few cases. Slight nephritis has also been reported in 78 per cent. of cases by Schwartz. We have to remember, however, that on the other hand cases are recorded, among them those by Tuffier and Barker, in which operations have been successfully performed under spinal anaesthesia after failure with a general anaesthetic. The combination of scopolamine-morphine injections with a small dose of a general anaesthetic is now a recognized method of obtaining anaesthesia.

When one considers many of the objections raised against spinal anaesthesia its combination with scopolamine-morphine appears to be an advance, especially when one considers that injections of morphine have been used with advantage in cases of collapse following spinal anaesthesia. Krönig and Gauss advocate this method, and Busse has used it in 180 cases. Kümmell, however, reports unfavourably on the combination, and Freund dislikes the multiplicity of toxic substances.

The unfortunate fact which strikes one when studying the literature on the subject is the important differences of opinion expressed by various writers on the points submitted for discussion, especially with regard to the question in what class of case this method should or should not be employed. Most authorities, including Sonnenburg and Rhen, object to its use in children, but Deetry, Gautier, and Henking have reported its satisfactory use, and in Gaudier's wards the method was asked for by the children in preference to general anaesthesia. The majority of writers, including Silbermark and Colombani, recommend its use in old and feeble subjects, although others consider this a contraindication. Colombani and Rhen consider arterio-sclerosis a contraindication. On the other hand, Sonnenburg and others do not.

Marked differences of opinion also exist with regard to septic cases, the question of elimination of shock, and the results obtained by the elevation of the pelvis. Again, we find Barker and Dönitz both men whose opinions are bound to carry weight, differing from each other regarding the method by which the action of the drug is spread.

Notwithstanding these discrepancies, I believe this method to be of great value in major operations on the pelvis and lower extremities where a general anaesthetic is contraindicated, although, in my opinion, local anaesthesia should be sufficient for many of the cases reported in which spinal anaesthesia has been employed, especially if one includes Bier's most recent method of intravenous injection.

In conclusion, I must apologize if I have, in the short time at my disposal, failed to give many workers in this field their due recognition; but my feeling has been that my time would best be employed by suggesting the lines of discussion, as I know there are many present whose opinions we look forward to hearing with pleasure.

II.—DUDLEY W. BUXTON, M.D., B.S., M.R.C.P.,

Anaesthetist in University College Hospital, Consulting Anaesthetist to the National Hospital for Paralysis and Epilepsy, Queen Square, London.

I PROPOSE to make my remarks from the point of view of the anaesthetist, whose duty it is to include in his purview the well-being of the patient as well as the convenience of the operator. The value of this method is unquestionably great, and when one sees an ideal case one is prompted to believe that an ideal method has been discovered. It is so with all methods. Ideal cases, however, are not frequent; and, while recognizing the value of the method and giving due honour to those who have had the courage and ability to promote it by scientific work, I am compelled to point out that there is another side to the argument.

Professor Bier (Berlin), whose experience of spinal analgesia is probably unique, speaking before the German Surgical Society in Berlin, cautioned his hearers against the indiscriminate employment of this method. He narrows its use to pelvic operations and those done on the lower extremities, and advises local analgesia whenever it can be used, rather than spinal injection. Last year an important discussion took place in the Surgical Society of Paris, and there, again, most of the speakers were strongly opposed to spinal analgesia, and, in view of its dangers, urged the narrowing of its range of employment. Mr. Barker also, whose pioneer work has been so excellent and whose experience cannot but lend the greatest weight to his opinion, has advised caution.

The method has been suggested (1) as a substitute for anaesthesia by inhalation, or (2) as a resource when general anaesthesia is regarded as too dangerous.

Let us consider what has been urged for the general adoption of spinal analgesia and how far experience has justified the arguments which have been advanced.

At one time it was said that the technique was simple, the pain infinitesimal, analgesia perfect, after-effects rare, and relaxation of the musculature so complete that the surgeon was able to operate under the most favourable conditions. Its safety was infinitely greater than when general anaesthetics were used; indeed, enthusiasts spoke of the method as free from danger.

Experience has unfortunately not wholly justified these vaticinations. It has compelled us to recognize a merit in general anaesthetics which one had not realized—the merit of making the patient unconscious. Although some few may dread the anaesthetic sleep, very many suffer great mental perturbation during a prolonged operation under spinal analgesia. I myself have seen the evidence of it, and, if it is urged that the belief of one man is of little value, I would point to the increasing frequency of the adoption abroad of subsidiary methods whereby the patients are put to sleep during the operation under spinal analgesia. Thus, Bier, Kroenig, and many others inject scopolamine and morphine before the analgesic is introduced into the subarachnoid space. This plan certainly increases the possibilities of danger, but, as it is becoming more and more common, it is presumably found necessary. I take it that the "nervous shock"—a term I employ for lack of a better—and the question of danger are, from the patient's point of view, the most important. I know it is said that patients who have had a general anaesthetic and a spinal analgesia prefer the latter. I have known, however, the reverse, and attach little importance to isolated statements. I find the consensus of opinion among those who have large experience favours exclusion of nervous persons as well as those who have a definite lesion of the nervous system, from the benefits of spinal analgesia.

With regard to the safety of the method, the percentage of actual failure appears to vary from 5 per cent. to 12 per cent., and, as Bier has pointed out, is usually a question of technique which will probably be overcome with further experience. Conclusions concerning danger to life and peril from "after-effects" are more difficult to arrive at. We find writers who have had fifty successful cases extol the safety of the method when compared with the use of general anaesthetics! We must, however, consider the matter from a much wider horizon. For purposes of comparison we must face the fact that general anaesthetics administered by men of equal calibre to those who have adopted spinal analgesia—men like Bier, Tuffier, Chaput, Reclus, and, in this kingdom, Barker—show an infinitesimal death-rate and minimal after-effects. Probably most surgeons can tell us that as general anaesthetics are constantly given by dangerous methods and by inexperienced persons, too much is given and the patient suffers. But the spinal analgesia method has so far been in the hands of experts with a ripe surgical experience working with a lively sense of their responsibility both as regards their patients and themselves.

It is true that we are still in a stage of groping, and while most have discarded cocaine, and many the adrenal extracts, others hover between stovaine, alypin, tropacocaine and novocain. Many, and the most experienced, restrict themselves to the lower site for puncture, and insist upon having the head kept above the level of the spine, others adopt the Trendelenburg position for their cases, within a few minutes of the injection. Some, notably Jonnesco, adopt high injections and attempt operations upon every area of the body. Some warn us to avoid spinal analgesia for children, others use the method in parturition and pursue its use throughout the whole life of the infant when born.

The general consensus of opinion is, however, in favour of narrowing the limits of the employment of this method. The wounded in war, children, persons over 65, syphilitics, those who have some infective or septic disease, sufferers from serious heart or nerve lesions, arteriosclerosis, the nervous and the alcoholic, those who have albuminuria, and diabetics are all excluded from spinal analgesia. This list comprises the opinions of various experts and narrows the field very considerably, but it is only fair to say that many very able surgeons who adopt the spinal puncture are prepared to risk the dangers of the conditions named and do not select their cases.

As to the actual dangers of the method, it is difficult to mention even briefly the records of casualties and serious sequelae without appearing to assume an attitude of antagonism which is quite foreign to my true feeling. The statistical method permits so many loopholes for error and exaggeration to creep in that I deprecate placing too much reliance upon it.

Tuffier, with an experience of ten years, tells us he has had no death and no late development of serious nerve lesion. On the other hand, Dr. Gaston Torrance, during a visit to the Continental clinics, collected 5,350 cases with 5 deaths. P. Hardruin met with a death in his first 10 cases, and refers to 15 other fatalities. Hartmann has recorded 2 deaths, Professor Kader (Cracow) lost 4 patients on the operating table out of a total of 1,907 cases, and if time permitted I could give others, but I attach only this importance to the record of deaths in the practice of really skilled operators, that it proves the method is not so free from possibility of peril as we are sometimes given to believe.

The more important question for my present purpose is to inquire whether the spinal method is exempt from grave after-effects. Like all procedures which involve the introduction of a drug into the tissues of the body, spinal injection commits us absolutely to the consequences of the dose injected. With general anaesthetics the skilled administrator can readily adjust his dose of anaesthetic to each case, and can vary it from time to time as the necessities of the patient or surgeon require; with all injections this is impossible, and herein lies the danger alike of the scopolamine-morphine and the spinal methods.

Chaput, who recommends the spinal method in selected cases, adduces as one of its merits that it is free from such after-effects as albuminuria and vomiting. Schwartz, however, finds albuminuria more or less severe, and retention of urine is not uncommon. Feliziano records cystitis and paralysis of the bladder and rectum. W. Thomaschewski found slight albuminuria in 60 per cent. of his cases, but he avers serious nephritic symptoms were rare. Although often transitory, the albuminuria is in some cases persistent, lasting a month, and accompanied with cylindruria. Retention of urine necessitating catheterization and paralysis of the bladder arising in cases when the seat of operation was not one which might account for the complications are recorded by Becker (Hildesheim), F. Koenig (Altona), Baisch (Heidelberg), and Weiner (Brussels). Weiner's patient needed the catheter for several months, and suffered from nocturnal incontinence even after the bladder had in part resumed its functions.

The observation of Kurzwelly of Stuttgart is of some importance, since one of the main indictments against general anaesthetics is the alleged frequency of pneumonia after operations. He found that post-operative pneumonia occurs as commonly after spinal injection as after a general anaesthetic. Upon this point I may be permitted to point out that post-anaesthetic pneumonia is a practically preventable complication, and further that it is commonly assumed in cases in which the condition is due to purely operative or pathological causes.

It is impossible in the time allotted me to deal at all fully with the published records of complications and after-effects due to spinal injection. The reports of the meetings of surgeons at Berlin, at Paris, at St. Petersburg, Munich

Brussels, Heidelberg, and Bucharest, should be carefully studied and pondered before the method is advanced as being free from danger. Without attempting to traverse the ground in detail I may cite the following:

Dönitz (Bonn) records complete failure of respiration after injection, requiring several minutes of artificial respiration. Hesse (Weisbaden) met with complete collapse in a vigorous man of 40, who was with difficulty resuscitated by injections of oil of camphor and heart massage. The same observer records a similar condition—cessation of all respiration and failure of the heart in a healthy man of 22; this patient, after being restored to consciousness, again collapsed, but eventually recovered. Grieffenhagen (Reval) records two cases of respiratory failure, requiring artificial respiration for twenty and ten minutes respectively. Sandberg (Bergen) had to employ artificial respiration for twenty-eight minutes to save one of his patients; while P. Steiner (Budapest) only restored natural breathing after thirty-three minutes. Many other observers might be quoted, but I will only add the experience of S. P. Fédorov (St. Petersburg). The patient, a woman, collapsed, and ceased breathing after the injection, and Féderov had to have artificial respiration continued for five hours. The patient remained in a state of stupor many hours subsequent to this.

What is the cause of respiratory failure in these cases we are not aware; conflicting views exist, for while some surgeons advise the head-raised posture to prevent ascent of the injected fluid, others practise the feet-up position, in order to keep the bulb irrigated. I have seen several cases of partial respiratory collapse, but luckily they have been slight, and the patients were restored by oxygen administered under pressure.

Vomiting after spinal injection is certainly not so rare as Chaput and others aver, and when it is present it is often very severe and very persistent. Headache, again, cannot be eliminated. H. Heineke and A. Läwen, who examined its incidence, give it as 58.6 per cent. of the cases, and Deetz has recorded a case in which it lasted *for six weeks*. Heresen, Blaubert, and others record persistent insomnia.

But perhaps the most painful sequelae are the paralyses which follow and appear to be due to the mode of producing analgesia. Ocular muscle paralysis has been very frequently recorded, and Ashe puts its incidence as 1 per cent., Degreaves at 2 per cent., and Chapot and Pascalis at 1 in 258 cases. It would be tedious to mention in detail the paraplegias recorded; they appear not infrequent, and in some cases persist for a long time. Serious lesions of the cord, septic meningitis leading to death, are among the after-effects which have been described by surgeons who advocate and practise the method.

At present we have no exact knowledge of the mechanism of the action of the drugs upon the portions of the nervous system with which they are brought in contact, and so we are unable to trace the mechanism of the deaths or serious troubles following the use of the method. Observers differ, and sufficient experimental research as yet has not been made. Take the headache for example. One school tells us it is due to excess of cerebro-spinal fluid and its remedy lies in removing this excess. Others insist that it is the deficiency of fluid, and caution against any loss during the performance of the puncture. Opinions again differ as to whether the injected drug travels up the canal by diffusion or is conveyed by the stream of the cerebro-spinal fluid, and so owes its movement largely to the posture of the patient.

At any rate, it is clear that, whatever else is uncertain, we are bound to admit that spinal analgesia, even in the hands of the few, is neither free from danger to life nor exempt from the possibility of grave after-effects. In the present state of our knowledge we are hardly justified in telling our patients that it is safer, speaking generally, than is anaesthesia by inhalation.

To me it seems that we should adopt its use as an adjunct to our present armamentarium for use when the special circumstances of the case or the condition of the patient appear to indicate that its use offers a better chance of life than would a general anaesthetic.

Whether the plea so often advanced in its favour by enthusiasts for the method—that it enables the surgeon to operate better as the muscles are relaxed—is valid I cannot say. The muscles which in abdominal surgery give most trouble are the recti abdominis, and, as these are respiratory muscles, their tonicity persists until respiration is seriously weakened. I find also some surgeons have relinquished the method in abdominal cases because the muscles are not relaxed. Here again is conflict of opinions. Personally I have not seen marked muscular relaxation after stovaine. General anaesthetics are also often blamed for a rigidity which is in fact asphyxial and due to too much anaesthetic and too feeble lung ventilation. Indeed, in summing up the matter, I may be permitted to say that the general anaesthetics are blamed by many for shortcomings which are really not theirs, but belong to those who use the anaesthetics without sufficient physiological knowledge and technical experience. Take the incidence of death in the last report on anaesthetics tendered to the German Surgical Society: 71,000 narcoses are recorded, with 21 deaths. We are told one quarter of the cases were done under chloroform, three-quarters under ether. The incidence of deaths, according to accepted statistics and grouping the inexperienced with the experienced, should be 6 deaths due to chloroform, 3 to ether, or 9 in all; so that 21 is more than double what we here regard as a "normal" incidence of death. I have little doubt that if as much care were habitually taken by all the hosts of those who administer general anaesthetics as is bestowed in the experimental use of spinal injection even the "normal" incidence would be greatly lessened, and, from the safety point of view, general anaesthetics would prove superior to spinal analgesia.

DISCUSSION.

Mr. A. E. Barker (London) did not believe that at present it was right to describe any one as an expert in the production of spinal analgesia, as had been done by Dr. Dudley Buxton. At present all alike were students, who were feeling their way, and were without a store of knowledge accumulated by their seniors. In general anaesthesia there were truly men who might be with propriety called experts, and who had the experience of sixty years to rely upon and to guide them. His own attitude was that of a student. He undertook the study of the subject because it seemed to him that the merits of this new form of anaesthesia ought to be studied in a place accessible to all, such as University College, by those who realized fully the responsibility of the work. He urged the importance of making careful and uniform notes of each case. His own cases were recorded by a special officer appointed for the purpose and published from time to time. He was sure, whatever its future might be, that spinal analgesia was worthy of such careful study.

Dr. Alexander Don (Dundee) contrasted the toxicity and after-effects of stovaine and novocain. Stovaine was a greater irritant, but novocain was less reliable, and headache was more common after its use. Perspiration, pallor, and fainting was due to the drug and not to relaxation of the abdominal muscles. There was room for the method as an adjunct to general anaesthesia but not as a rival. It was not so safe for general use as general anaesthesia.

Dr. J. Mill Renton (Glasgow) said that the method he employed was that introduced by Mr. Barker, and he felt strongly that it was the best. By the use of a fluid heavier than cerebro-spinal fluid one had definite control over the distribution of the anaesthesia. He made a preliminary injection into the skin of a weak solution of cocaine, and in this way was able to make the subsequent spinal puncture perfectly painless. The method was successful in preventing shock. In very nervous persons he was in the habit of inducing spinal anaesthesia in the usual way, and later giving just so much ether by the open method as would obliterate consciousness. This combined method was of great use in nervous persons and in cases where great shock was feared, as in amputation of the thigh or disarticulation at the hip-joint.

Dr. G. A. H. Barton (London) said that while spinal anaesthesia had obvious advantages in a few cases, he was convinced that its merits could not be compared with those of general anaesthesia in routine work. In a considerable percentage of cases failure to produce analgesia occurred; as immediate after-effects vomiting, headache, incontinence of urine, albuminuria, were all apt to occur

with more or less frequency. The late after-effects were even more serious. Paralysis of varying kinds, meningitis, retention of urine, etc., had been described as occurring in a considerable number of cases. In the majority of cases the retention of consciousness was a misfortune. In some few, as in the regurgitant vomiting of intestinal obstruction, where it prevented inhalation of vomit, it was an advantage. He believed the mortality was as great as 1 in 500—an appallingly high percentage. The use of spinal anaesthesia, he believed, would be confined in the future within very small limits.

Mr. LEEDHAM-GREEN (Birmingham) spoke in favour of spinal anaesthesia, which he had employed extensively for the last four years. He began by using stovaine, then passed on to novocain, and for the last two years had used simple tropacocaine without the addition of adrenalin. In his hands tropacocaine had proved to be far the best for spinal anaesthesia, and less frequently followed by unpleasant after-effects such as headache and vomiting. Immediately prior to operation the patient received liquor strychninae mv subcutaneously. He did not now make use of the Trendelenburg position or any other device to assist the upward diffusion of the anaesthetic in the spinal sac, and did not attempt to get anaesthesia above the umbilicus. He had never experienced any serious after-effect from this method, and regarded it, from the surgeon's point of view, as being preferable to either chloroform or ether for the majority of major operations below the iliac crests. Especially was it indicated in cases in which the patient suffered from bronchitis or other inflammatory conditions of the lungs or air passages, in chronic alcoholism, nephritis, and possibly diabetes. It was of great service in dealing with gravely debilitated patients, such as those suffering from chronic intestinal obstruction, extravasation of urine, senile gangrene, and the like, where the disturbance occasioned by a general anaesthetic often robbed the patient of his chance of recovery. Again, he found it of great value for catheterization of the ureters in patients with highly sensitive bladders, as in cases of tuberculosis. For, unlike a general anaesthetic, spinal anaesthesia did not inhibit the renal secretion. Against all this there were certain disadvantages to be set. There were unavoidable drawbacks common to all local anaesthetics—namely, the consciousness of the patient, who was fully aware of everything that was going on, and might readily, from an unguarded remark by a nurse or spectator, learn considerably more about his condition than was desirable. There was no doubt that though some patients had a dread of losing consciousness, the majority preferred to be entirely oblivious of what was taking place. A patient, however, had never been found to become hysterical, or even excited, during an operation under spinal anaesthesia. The absolute loss of all sensation at once gave confidence, and they took as little notice of the operation as they would of the attentions of a hairdresser. The contraindications he recognized were childhood, marked nervousness, severe septic conditions, and pustular eruptions of the skin.

Dr. V. G. L. FIELDEN (Belfast) said that he wished to draw attention to one point only: That it was impossible in spinal analgesia to alter the dose to suit the individual needs of the patient. In general anaesthesia a dose sufficient to keep one patient adequately anaesthetized would have little effect on another. In spinal anaesthesia such differences in patients must be ignored, and a routine injection given. Once injected, nothing could be done to reduce the dose if it prove excessive.

Professor W. E. DIXON (Cambridge) said that he had made use of intraspinal injections only in animals. He suggested that some of the unfortunate after-effects might be due to leakage of cerebro-spinal fluid from the spinal theca rather than to the direct effect of the drug. He thought that the paralysis was probably peripheral in origin, and not due to changes in the spinal cord.

Mr. GEORGE CHIENE, in replying, said he was sorry no one had spoken of the combination of strychnine with stovaine, or other similar substance, as he thought that this modification gave promise of good results. One should look to the possibilities of the future rather than try at present either to laud or condemn spinal anaesthesia. No anaesthetic was at present entirely satisfactory, and, therefore, all attempts at improvement should be given a fair trial.

ELIMINATION OF STOVAINE AFTER SPINAL ANALGESIA.

By ARTHUR E. BARKER, F.R.C.S.,

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THERE are so many matters still obscure about the general and local effects of intradural injections for the production of spinal analgesia that the publication of the following short note seems advisable, imperfect though it admittedly is. Before this method of anaesthetizing our patients can be put in its proper place among our surgical procedures, we want, among many other things, to know as clearly as possible: (1) How long the anaesthetic agents used remain in the dural canal unabsorbed, fixed, or destroyed, and what effects, apart from analgesia, they produce there; (2) what immediate and remote effects, if any, the injection of the drugs employed have upon the structures with which they come in contact; (3) how the compounds injected are eliminated from the system generally.

These questions are already being worked out abroad with praiseworthy thoroughness, the very large number of spinal analgesias which are being done there offering abundant materials for study. It may be hoped, therefore, that before long the various effects of the drugs used in the procedure may be better understood in all their aspects. In the meanwhile, this small contribution to a very large subject is published in the hope that it may suggest to others the desirability of making more extensive inquiries in the same direction.

It may be admitted at once that the testing for the various drugs employed in the procedure in question in animal fluids is laborious. In my own work I have only searched for stovaine. The method adopted has been as follows: I have taken the details from a paper by Klose and Vogt, whose work in this direction should be better known. The sample fluid, whether urine or liquor cerebralis, has been first rendered slightly alkaline with a little 3 per cent. potash solution to split off the base of the stovaine. The fluid has then been shaken up in a separator with an equal volume of ether, which dissolves out the oily base. The heavier fluid has then been drawn off below. Evaporation of the ether in a water-bath nearly to dryness has followed. The residuum has then been mixed with a little 3 per cent. hydrochloric acid, reproducing stovaine from the base, and to the fluid so obtained a few drops of tinctura iodi have been added. A mere trace of stovaine, if present, will give a dull, brick-red precipitate. Control experiments have shown me that so small an amount as 1 in 150,000 of stovaine dissolved in water will give this reaction clearly.

How long these anaesthetic compounds remain in the dural sac after injection appears to vary with the drug employed. Klose and Vogt, from experiments on animals, state that they have found that tropacocaine disappears soonest from the cerebro-spinal fluid, novocain somewhat later, and stovaine latest. In nine of my own cases I have withdrawn cerebro-spinal fluid (from patients previously injected with stovaine), for various reasons, at periods varying from half an hour to forty-six hours after injection. The results as regards the presence of stovaine have been as follows: Half an hour after injection the reaction with tinctura iodi, used as above, has been strongly positive. Seventeen hours after, in another case, it was also strongly positive; in two other cases, nineteen hours after, it was the same, as also in two respectively twenty and twenty-four hours after. In three other cases, forty-four, forty-five, and forty-six hours after, it was negative or doubtful. From this it would appear that stovaine remains in one form or another within the dura for somewhere about the first two days. It must be remembered that on being injected into the alkaline cerebro-spinal fluid part of it is broken up. This can be seen if into the fluid we draw off from the sac before injection a small quantity of our stovaine solution is dropped. The clear fluid, after a few moments, becomes milky. Under the microscope this is seen to be due to countless minute oily globules, which in time run together on the slide into larger globules. These consist apparently of the oily base split off from the stovaine by the alkali of the cerebro-spinal fluid. Doubtless this occurs within the living dura, and these globules may require a longer time to be absorbed than novocain, which

is not broken up in the same way on injection into the spinal fluid.

The question whether any immediate effect is produced upon the structures within the dura by the stovaine injection is answered, so far as my own observations go, in the affirmative. In all these cases in which I have withdrawn cerebro-spinal fluid within forty-six hours of the injection of stovaine into it the fluid has been distinctly turbid. And this turbidity has been found on microscopical examination to be due to the presence of leucocytes of various forms. The number of these seemed greatest about the end of the first day. This would appear to indicate a certain amount of irritation of the serous lining of the cavity. But whether it was due to a general irritation of the whole extent of the dura or only of the immediate neighbourhood of the puncture, it is impossible to say from these observations on the human subject. I am inclined to think that it might be purely traumatic from the effects of the simple puncture. It must be remembered that the second puncture was always made in the immediate neighbourhood of the first, and here there ought to have been some plastic exudation in any case for the repair of the puncture. This might have furnished the leucocytes without any other part of the dural tract being affected, and would subside after the healing of the first puncture. This view gains some support from the only case in which I have had the opportunity of examining the dura and cord on the third day after injection, the patient having died from another cause. Here there was no trace of irritation discovered by our pathologist within the dura, and the puncture was difficult to find at all. The patients from whom the turbid fluid was withdrawn all recovered perfectly. It has been suggested that the headaches sometimes following on spinal analgesia are due to aseptic irritation and hypersecretion within the dura, but this explanation is not quite satisfactory. So far as we know, they appear to be as frequent with one drug as with another, and, if it were correct, headaches ought, I think, to be the rule and not the exception. However this may be, I offer these observations on the fluid withdrawn some hours after injection as a contribution to the inquiry as to the local effect of the injection of stovaine into the dural sac.

It is a remarkable fact, as seen from these cases, that, long after the analgesic effect of the drug has passed off, stovaine, or its base at all events, can be shown to be unmistakably present in the cerebro-spinal fluid. The average duration of spinal analgesia is from one to two hours, but in my own analyses stovaine was present up to twenty-four hours at least in the cerebro spinal fluid. If this is so the question arises, Why does the analgesia only last for a couple of hours? To this question no satisfactory answer appears to be at present forthcoming, unless it be that only perfect stovaine is analgesic, and that its base split off by the alkaline cerebro-spinal fluid is not, and that this is alone what we recover in our subsequent tappings. In the subjoined table the results of my analyses are given as far as they go. They represent a good deal of work, which for want of time I was unable to carry further, much as I should have liked to do so. Observations in the same direction are urgently needed both on animals and the human subject. Observations on possible remote structural changes in the cord and its roots as the result of injections for spinal analgesia have also been made by expert neurologists, but, as far as my reading goes, they appear to be contradictory. Some assert that changes can be seen a long time after, while others state that only very transient effects are produced. I am not qualified to say in which direction the weight of histological evidence points; but from clinical observation in my own cases and from a study of those of others I think it is clear that no permanent structural change in the nervous structures leading to definite symptoms has up to the present been proved to be due to the injections in question.

They show that within the first twenty-four hours after injection stovaine or its base is plentifully present in the cerebro-spinal fluid. Between the twenty-fourth and forty-fourth hour no cerebro-spinal fluid was withdrawn, and I cannot say whether any stovaine remained in it during that time. After the forty-fourth hour, it could not be found in the 3 cases in which cerebro-spinal fluid was obtained at and after this period. It also shows that in the urine no stovaine could be found before the forty-fifth hour after injection, of the dural sac, except in one case. From the forty-fifth to the seventy-fifth hour it was clearly present, and later could not be found. It appeared to reach its maximum in the urine between the fiftieth and sixtieth hour, and then to decline in amount until about the seventy-fifth hour, after which no positive result could be obtained. Roughly speaking, then, it seemed to be eliminated almost entirely during the third day, and to remain in the cerebro-spinal fluid until then.

Number of Hours after Spinal Injection when Fluids were Obtained for Testing.	Cerebro-Spinal Fluid obtained at the Hours given, Tested in 9 Cases.		Urine Passed at Hours given was Tested in 12 Cases.		
			Number of Hours.		
½	1 case	+	10		
17	1 case	+	to	2 cases	– –
19	2 cases	+ +	20		
20	1 case	+	to	5 cases	– – – – – –
24	1 case	+	30		
44	1 case	–	to	2 cases	– –
45	1 case	?	40		
46	1 case	?	to	5 cases	+ ? ? ? –
			45		
			to	8 cases	+ + + + + – + – –
			50		
			to	8 cases	+ – + + + + + + + +
			55		
			to	4 cases	? + + +
			60		
			to	5 cases	+ ? ? + + +
			65		
			to	7 cases	– + + ? + + + +
			70		
			to	5 cases	+ ? + – + ? +
			75		
			to	1 case	–
			80		
			to		– – –
			90		

Familiarity with the whole method of analysis was necessary to eliminate possible sources of error, and considerable labour and time were necessary to acquire this. When urine, rendered alkaline by 3 per cent. potash solution, is shaken up vigorously with ether, a jelly-like material—apparently an emulsion—is formed in many cases, though not in all. This substance should contain the stovaine base, but it is difficult to filter even through wool, and, if evaporated alone in a water-bath, leaves a high-coloured residuum. To this the 3 per cent. hydrochloric acid can be added, and then it can be filtered before the tinc. iodi is used. But perhaps the best way to carry out the test is to shake up the urine after the addition of the alkali with ether, and, whether a jelly has formed or not, to let it rest until it separates into the urine layer below and the ether layer above. When the former has been drawn off below, the hydrochloric acid is added to the ethereal extract at once and shaken up. This will combine with the base and break up the jelly-like material. The product can now be filtered, and is then evaporated in a water-bath until *all* the ether is removed, when the test with tinct. iodi can be applied to the residuum, with or without a small addition of distilled water. But *all* the ether must be driven off, or there will be a precipitate with tinct. iodi, whether stovaine is present or not. This was very puzzling to me at first, as it was to Mr. R. Bennett, our hospital pharmacologist, who was kindly helping me; but he was able later to

demonstrate that about 10 per cent. of ether in dilute hydrochloric acid will always give a reddish-yellow precipitate with the tinct. iodi alone. It is therefore necessary to be very careful to boil off every trace of ether from the acidulated urine washings before adding the tinct. iodi.

This test with tinct. iodi is far more delicate than that with Meyer's reagent, as can be proved by control observations with very dilute graduated solutions of stovaine in water. Again, the colour of the tincture is a little embarrassing at first, as also the fact that a small amount of the brick-red precipitate is soon dissolved in any excess of the tincture.

A little practice gets over these difficulties, and I hope that systematic work done in the direction of testing for stovaine in the urine may furnish us with much valuable information in the future. If it be shown by further carefully-conducted observations on fluid withdrawn from the dura after injection that there are evidences of irritation of the serous membranes where stovaine was employed, as in my own cases, as shown by leucocytosis, and that this is absent where other drugs are used, it would tell in favour of the latter beyond all doubt. But hitherto very little has been done in this direction. The whole question of the value of spinal analgesia is an intricate one, and the relative values of rival drugs cannot be settled by casual clinical use, but must be tested by every physiological means at our disposal.

DISCUSSION.

Dr. NEWMAN NEILD (Bristol) asked whether Mr. Barker had ever repeated the injection shortly after the disappearance of the paralysis, while the test in the fluid was still positive.

Dr. H. H. DALE (London) suggested that the test was too sensitive. It reacted in such great dilution of the fluid that it gave a positive result in a percentage which was too weak to cause analgesia.

Mr. BARKER, in reply, thanked the speakers for their valuable suggestions. He was anxious only to call attention to the matter, and he thought that his remarks had already brought forth fruit.

THE ACTION OF CRESOTINIC AND TOLUIC ACIDS.

By ROBERT MAY, M.D.,

McCunn Research Scholar in Therapeutics, University of Glasgow.

IN 1875 Buss announced his discovery of the therapeutical value of salicylic acid in acute rheumatism, and in the following year he published a paper on the action of the closely allied cresotinic acid, showing that it exercised similar curative effects in this disease. The two acids are nearly related chemically (salicylic acid being $C_6H_4OH.COOH$, and cresotinic acid $C_6H_3OH.COOH.CH_3$). There are no less than ten isomeric cresotinic acids, three of which can be obtained commercially in a chemically pure state, and it was with these and their sodium salts that the following experiments were made. They are known respectively as ortho-cresotinic, para-cresotinic, and meta-cresotinic acid. It was most probably with a mixture of the three in the form of their sodium salts that Buss made his observations. No further work was done till 1888, when Demme published an account of the action of the three acids. He found that para-cresotinic acid had an effect in acute rheumatism similar to, but less powerful than, that of salicylic acid, and that men and dogs could tolerate doses of 90 to 120 grains without showing symptoms of poisoning. Meta-cresotinic acid and its sodium salt he pronounced to be almost without action, while he described ortho-cresotinic acid and its sodium salt as active heart poisons, even in small doses. These results have been copied into all the current textbooks which mention the respective acids, but, as an outcome of the present investigation, it is clear that Demme's statements regarding meta-cresotinic and ortho-cresotinic acids are erroneous, and that he was probably working with other or very impure substances.

In 1891 Professor Matthew Charteris published observations of great value showing that many of the poisonous effects of salicylic acid, especially on the heart, were due to impurities. His investigations led to such improvements in the manufacture of salicylic acid and sodium salicylate that they are now ordinarily obtained chemically pure.

Misled by Demme's statements as to the powerful toxic effect of ortho-cresotinic acid, he ascribed the depressing action on the heart to this body being present in salicylic acid as an impurity. He also details experiments with substances which are called "para-cresotic" and "ortho-cresotic" acids, but there must have been a mistake as to the identity of the bodies used. As a matter of fact, pure ortho-cresotinic acid is not more toxic than pure salicylic acid. To determine this I made a series of observations on rabbits. In medium-sized rabbits the lethal dose of sodium salicylate given by the mouth was found to be 60 to 90 grains; with sodium-ortho-cresotinate it was much the same, and with sodium-meta-cresotinate 60 grains was sometimes fatal, sometimes not, but 75 grains always caused death. Para-cresotinate of sodium was somewhat less active.

If the salts are given subcutaneously about half these doses prove lethal. All three salts can be given to man in much the same dose as sodium salicylate, but if the ortho-cresotinate be pushed it exercises a distinctly slowing and depressing action on the heart. In rabbits the symptoms caused by the salicylates and cresotinates are very similar. Thirty grains by the stomach cause slight depression, and, when this dose is considerably exceeded, the depression is marked, the legs are paretic, and the animal may recover, or die some time during the next seventy-two hours. The respirations become rapid and shallow, and more or less marked convulsions occur. The *post-mortem* appearances are negative, but with sodium salicylate the kidneys are usually very much congested.

Action on Blood Pressure, Pulse, and Respiration.

To study the effect on blood pressure tracings were taken from rabbits. The animals were anaesthetized with ether; in all cases a solution of the drug was injected into the jugular vein, and the tracing was taken from the carotid artery.

With sodium salicylate there is an early and direct action on respiration, the circulation being affected later. The first dose given was 2 grains; this produced no result on pulse-rate or on blood pressure; but the respiration-rate, which at the beginning of the experiment was 15 in 10 seconds, fell to 13. Three grains were then given, and

Sodium Salicylate.

	Time.	Pulse in 10 Seconds.	Height of Mercury.	Respirations in 10 Seconds.
Normal ...	12.22	36	120 mm.	15
+2 grains ...	12.24	36	120 mm.	13
	12.26	36	120 mm.	13
+3 grains ...	12.27	36		
	12.29	36	92 mm.	12
	12.33	36	90 mm.	12
+6 grains ...	12.35			
	12.37	28	90 mm.	7
	12.40	28	92 mm.	7
+9 grains ...	12.41			
	12.43	22	60 mm.	5
	12.43½	10	56 mm.	5

shortly after the injection the respirations fell to 12, and the blood pressure was lowered 28 mm. (of mercury). No further change took place until 6 grains were given; the respirations now numbered 7, the blood pressure fell 2 mm., and the pulse-rate, until now at 36 in 10 seconds, fell to 28. This was followed by a further dose of 9 grains, when the respirations fell to 5, and became shallow and panting, but in a few seconds later there were were convulsive inspirations and the rabbit became very cyanosed. The heart was now much affected; it became irregular, and ceased to beat three minutes after the rate of respiration became so markedly diminished.

Ortho-cresotinate of Sodium.

With this salt doses of 1, 2, 3, and 4 grains caused no change in the blood pressure, pulse-rate, or respiration-rate. Six grains were then given; the respirations soon became very shallow, and following this there was a fall in blood pressure of 24 mm. The respirations soon became fainter, there was a failure of circulation, and death followed a few convulsive inspirations. Here, again, it would seem that the primary action is on the respiration.

Meta-cresotinate of Sodium.

Three grains were given without any appreciable effect, but a larger dose, 5 grains, caused a weakening of the pulse and a fall in blood pressure. From this, however, the rabbit recovered, and a larger dose, 8 grains, was given; shortly after this injection the heart stopped. Death in this case was due to failure of circulation, probably from a direct action of the drug upon the heart.

With *para-cresotinate of sodium* there is also a direct action on respiration. The respirations become irregular, and convulsions follow a dose of 6 grains.

It is evident that none of these acids is very toxic. By the mouth in rabbits a dose of 60 to 90 grains is required to cause death, and by the jugular vein 3 to 5 grains may be given before any definite action is shown on the respiration or circulation. The former is affected much earlier, and by smaller doses than the latter. In man moderate therapeutic doses of sodium salicylate or cresotinate do not appreciably depress either respiration or circulation.

Action on Ferments.

From a study of the effects of the three cresotinic acids on fermentation, it is evident that their action is very similar to that of salicylic acid. The extent of the action on yeast may be judged by noting what strength of the acid solution is required to inhibit fermentation entirely, and for what length of time the fermentation can be delayed by using weaker solutions of the acid. It has been shown by Kolbe that salicylic acid in the strength of 1 in 1,000 prevents fermentation by yeast in a 10 per cent. solution of sugar, but a solution of 1 in 2,000 also prevents it, while with 1 in 3,000 fermentation is delayed for about forty-eight hours. By using meta-cresotinic acid in a 1 in 3,000 solution, fermentation is entirely inhibited, and ortho-cresotonic acid in the same strength delays it for seventy-two hours, so that the action of these two acids would seem to be even more powerful than that of salicylic acid.

With Yeast.

Strength used.	Meta-cresotinic Acid.	Ortho-cresotinic Acid.	Salicylic Acid.	Para-cresotinic Acid.
1 in 2,000 ...	No fermentation	No fermentation	No ferment ation	+48 hours
1 in 3,000 ...	No ferment ation	+72 hours	+48 hours	+24 hours
1 in 4,000 ...	+96 hours	+48 hours	+24 hours	fully in 24 hours
1 in 5,000 ...	+48 hours	+4 hours	+4 hours	+4 hours

+hours means that fermentation was delayed for that length of time.

Experiments were also carried out with *emulsin*. This ferment splits up amygdalin into hydrogen cyanide, benzaldehyde, and glucose, when the odour of the hydrocyanic acid can be readily detected, and the mixture, owing to the presence of sugar, reduces Fehling's solution. When salicylic acid or any of the cresotinic acids (1 in 1,000) was added with the ferment the mixture failed to reduce Fehling's solution, hence the fermentative action of the emulsion had been inhibited.

All four acids inhibit the action of pepsin to an equal degree; with ptyalin it was found that ortho-cresotinic acid lessened the activity but did not kill the ferment, while the meta-cresotinic and para-cresotinic acids and salicylic acid prevented fermentation.

Action on Bacteria.

Our knowledge of the bacteriology of acute rheumatism is still very indefinite, and as this made it impossible to study the action of the acids under investigation upon a specific rheumatic germ, their comparative bactericidal power was tested on two organisms—a streptococcus and *B. coli*. These were kept in contact with weak solutions of the respective acids for one hour, and then cultures were made in Petri's capsules, which were then incubated for three days. For a "control," sterile water was used in place of the acids. In the strength of 1 in 1,000 salicylic acid and the cresotinic acids stopped the growth entirely. In the strength of 1 in 1,500 the meta-cresotinic and the ortho-cresotinic acids prevented growth, while with salicylic acid and para-cresotinic acid there were a few colonies, but the growth was not nearly so abundant as in the control. With 1 in 2,000 a good growth was obtained in all.

For the *Bacillus coli* the same method was employed, the strength of acids used being 1 in 2,000 and 1 in 3,000; and here it was found that after keeping the bacillus in contact with the acids for ten minutes all three cresotinic acids prevented growth, while with salicylic acid there was quite a good growth.

Antipyretic Action.

The antipyretic action of salicylic acid is well known. Buss drew attention to it in his first paper, and it was after witnessing its effects in certain fevers, and in employing it for a similar action in acute rheumatism, that he found it was something more than an antipyretic in this disease. It is now universally recognized as a drug capable of reducing a high temperature to the extent of 1 to 3° F.

Cresotinic acid has a similar action. Thirty grains of ortho-cresotinate of sodium given in a case of phthisis pulmonalis caused, within one and a half hours, a fall in temperature of 2° F. It was tried in several cases of phthisis, and in two cases of erysipelas, and in all these it caused a similar fall of temperature; but, as with salicylic acid, the temperature rose again after the action had passed off. When ortho-cresotinate of sodium was given no unpleasant symptoms were noted, even in cases where the dose reached 20 grains thrice daily for two weeks. There was occasional but rarely slight singing in the ears and a little deafness, but these symptoms were not sufficiently marked to cause the patient to make any complaint. This is in marked contrast to the symptoms which are so often found after the administration of similar doses of sodium salicylate for a lengthened period. Meta-cresotinate and ortho-cresotinate of sodium are excreted chiefly by the kidneys, the urine giving a deep purple colour when tested with ferric chloride. The ferric chloride reaction was also obtained in the bronchial secretion, and in the fluid taken from the joint of a man suffering from gonorrhoeal rheumatism. It was not obtained in the saliva, or in the sweat.

Action in Acute Rheumatism.

Observations were made by me only with sodium ortho-cresotinate, but similar results have been obtained with its isomers, which will be published elsewhere.

Ortho-cresotinic acid, so like salicylic acid in its chemical constitution and in its action on yeast, emulsin, etc., also resembles it in its action in acute rheumatism. It brings about the disappearance of the symptoms in as short a time, as can be seen from the accompanying cases. No poisonous symptoms were noted in the cases treated with it, nor was there in any of them any sign of relapse, even though the drug was stopped early in course of the convalescence.

Of those treated, the following are notes of two typical cases:

CASE I.

W. A., aged 30, a labourer. For two weeks before admission to hospital had felt "out of sorts," and had suffered from vague pains in the joints, and also from sore throat. He was admitted on May 5th, 1906. Some time before admission the ankles became swollen and painful, and soon other joints were affected. This was the second attack. The patient had never had chorea, nor was there any evidence of syphilis or gonorrhoea.

The area of cardiac dullness was normal, and no valvular lesion could be detected. He was a well-nourished man; his temperature on admission was 101° F. He lay motionless in bed, and the slightest movement gave him intense pain. The following joints were swollen and painful: Ankles, knees, wrists, and right shoulder.

May 6th, 1906. The patient did not sleep well last night; the joints remain swollen and very painful. Sodium ortho-cresotinate, 15 grains, every four hours was prescribed to-day.

May 7th, 1906. To-day the joints are free from pain except on movement. The swelling is distinctly less in the affected joints, and the body is covered with a profuse perspiration.

May 8th 1906. The pain has entirely disappeared and the swelling is quite gone.

May 10th, 1906. The patient now feels quite well and the drug is stopped after having been administered for ninety-six hours—four-hourly for seventy-two hours, and then three times in twenty-four hours.

The patient remained quite well and was discharged on May 25th.

CASE II.

P. B., aged 41, labourer, was admitted to hospital on April 27th, 1906, complaining of pain and swelling of the joints. He had been ill for four days before admission with sore throat and vague pains about the joints. His health had always been good; he had never had rheumatism, and until the onset of the present illness he had never suffered from sore throat.

When admitted his temperature was 100° F., and there was very acute pain and also swelling in the following joints—both wrists, ankles, and right knee. The swelling was considerable, and the wrists felt hot and were very painful on movement and extremely tender to the touch. The swelling was confined to the tissue around the joints, and did not extend into the tendon sheaths of the hands or feet. The area of cardiac dullness was normal and the heart sounds pure.

April 28th, 1906. Temperature 100°. Sodium ortho-cresotinate prescribed in doses of 15 grains every four hours.

April 29th, 1906. The patient slept fairly well during the night; the left wrist is free from pain and swelling; the other joints are still swollen, but the pain is much less severe. There is very profuse perspiration.

April 30th, 1906. The joints are now quite free from pain and the swelling is much less.

May 3rd, 1906. Sodium ortho-cresotinate is now being given three times a day, and there is no recurrence of any of the symptoms.

It can be seen from these two cases that sodium ortho-cresotinate—if we judge the effectiveness of the treatment by the degree of pain present—acted within twenty-four hours; that in forty-eight hours the symptoms had almost entirely disappeared, and in ninety-six hours, in one of the cases, we were able to stop the medicine without a recurrence of any of the symptoms. In both cases the drug caused no discomfort except profuse perspiration.

SUMMARY.

The cresotinic acids resemble salicylic acid in their action as antifermentatives, as bactericides, as antipyretics, and as specifics in acute rheumatism. Their toxic effect in animals is about the same, but otho-cresotinic acid is more depressing to the circulation.

Action of Toluic Acid.

Toluic acid has the formula $C_6H_4CH_3COOH$, and a glance at this formula shows that it is closely allied to salicylic acid and cresotinic acid. But its actions are very different. It does not inhibit to any extent the fermentative action of yeast, emulsion, pepsin, or ptyalin, nor does it prevent the growth of *Bacillus coli* or streptococcus.

Four grams of ortho-toluic acid given to a medium-sized rabbit by the stomach produced no apparent effect; with 5 grams there was slight depression, but no paralysis; the respirations were increased, and the rabbit died twenty-four hours later. A *post-mortem* examination revealed several eroded patches in the mucous membrane of the stomach; the urine contained an amount of albumen and gave a purple colour with ferric chloride; the kidneys were greatly congested. There seemed to be a very marked action on the kidney in all the animals experimented with—an action which is not found with cresotinic acid, and only slightly with salicylic acid. Doses up to 10 grains, injected into a vein, had no effect on blood pressure, or on respiration.

Toluic acid does not seem to have any antipyretic action, as a dose of 20 grains given in a case of phthisis pulmonalis did not affect the temperature. Only one dose was given in view of the fact that it had caused such a marked albuminuria in rabbits. In spite of its near chemical relationship to salicylic and cresotinic acids, it differs greatly from them in its action, which does not promise for the drug any therapeutical application.

THE QUACK MEDICINE TRAFFIC.

By J. C. MCWALTER, M.A., M.D., D.P.H.,
Barrister-at-Law.

[ABSTRACT.]

SINCE the last meeting of the British Medical Association a sum of £2,400,000, approximately, has been spent upon quack medicines, and as toll from this traffic the Government has received the sum of £300,000. No other Government occupies a similar position in this respect. The Governments of France and Germany tolerate no quack remedies, while in the United States, although there exists a tax upon proprietary articles, it is enacted that the composition of all must be set forth upon the label. Among the Colonies, Australia, South Africa, and Canada are vigorously attacking the problem. Our own Government alone remains apathetic. In this country it is the rule rather than the exception to find that patients seeking gratuitous treatment at hospitals and dispensaries have already squandered more money upon quack remedies than would have been sufficient to pay for medical advice and treatment.

Apart from the increase of infantile mortality from the indiscriminate use of opiates and narcotics, it is certain that in many cases the delay in securing medical advice diminishes the patient's chance of recovery.

The simplest method of control would undoubtedly be to secure by Act of Parliament that the composition of all patent medicines should be set forth upon the label. This is the plan which has been followed with success in the United States. The difficulty of securing such an Act is at present probably insuperable. While we are still unable to suppress open unqualified practice, we shall hardly be able to obtain means of putting a stop to an insidious form of evil which brings to the Treasury so large a sum per annum. What, then, can be done? A prosecution successfully undertaken by the medical officer of health for Liverpool is full of significance. Reflecting that prosecutions were frequently brought under the Food and Drugs Act for the sale of drugs not of the nature, substance, and quality demanded, the medical officer of health for Liverpool prosecuted a certain quack medicine maker on the ground that he had sold a solution as a specific for liver complaint, whereas it was an acidified solution of glycerine, worthless for that purpose, and sold therefore to the detriment of the purchaser. A conviction was obtained.

The good work of the British Medical Association in publishing the composition of a large number of the most widely advertised secret remedies should be of the greatest possible service. Published with the authority of the Association, the analysis is not likely to be impugned, while the great expense of obtaining such an analysis can no longer be urged. It is significant that the remarkable results of these analyses were quite unnoticed by the public press. It is an additional difficulty in coping with the evil that the press, like the Government, benefits financially to so great an extent by the traffic. It should not be difficult to prove that it is the duty of the public health authorities to prosecute, under the Food and Drugs Act or otherwise, persons selling worthless articles as cures for disease. The local analyst, with the results obtained by the British Medical Association's analyst before him, will have his difficulties greatly lessened and his results corroborated.

Memoranda:

MEDICAL, SURGICAL, OBSTETRICAL.

GUMMA OF THE CEREBELLUM.

P. H., aged 35, was, on the afternoon of May 15th observed by his messmates to be staggering in his walk, and on the morning of May 16th was brought by them to the sick-berth.

He was somewhat apathetic, and answered questions in a deliberate manner. He stated that he was quite well until noon on May 15th, when the symptoms commenced. He complained of severe and persistent frontal headache of vomiting, which was not preceded by nausea, and had no relation to the taking of food, and of giddiness. On attempting to walk the gait was staggering, and progression was in a zigzag manner, the patient swaying to and fro as if drunk, with a tendency to fall towards the right side. The knee-jerks were equal and markedly exaggerated. The pupils were irregular, the left being the larger; both reacted to light and accommodation. There was no nystagmus. Ophthalmoscopic examination showed the absence of optic neuritis.

Marked though the inco-ordination was whilst the patient was standing, when lying down he was able to perform finely co-ordinated movements, such as rapidly

bringing the finger tips together and touching the tip of the nose. The giddiness persisted while he was lying down. There was no paresis, and sensation was in no way affected. The special senses were normal.

The patient stated that he had a somewhat similar attack two years ago, and was in hospital for two months. There is a history of syphilis contracted ten years ago.

From the foregoing symptoms we came to the conclusion that the cerebellum was the seat of the lesion.

In the hope that the cause of the trouble was a gumma, potassium iodide was given in 10-grain doses three times a day, and increased by 5 grains every second day till 25-grain doses were reached. The patient at once commenced to improve, and on May 18th all symptoms were less marked. On May 21st the gait was almost normal, headache and giddiness had disappeared, and the reflexes were less exaggerated. On May 20th the patient stated that he felt quite well, and two days later was able to return to light duty. Since then the potassium iodide has been continued in 10-grain doses, with occasional intervals, and there has been no return of symptoms.

The interest of this case lies in the fact that of tumours of the cerebellum gumma is one of the rarest. In a series of 100 cases investigated by Krauss only 1 was due to gumma. The lesion was probably in the right hemisphere, as it was towards that side that the patient tended to fall.

E. Cooper, Fleet Surgeon, R.N.
W. H. Edgar, M.B., Surgeon, R.N.
H.M.S. *Bellerophon*, Home Fleet.

RECURRENT RHEUMATIC CHOREA TREATED WITH ASPIRIN.

Poynton and Paine have demonstrated the presence of the *Diplococcus rheumaticus* in the lymph spaces about the vessels in the superficial part of the cerebral cortex in chorea, while they were also able to produce choreic movements in rabbits by the injection of these diplococci into the veins. Ballen has pointed out that many cases of chorea, who have shown no evidence of rheumatism before the attack, do so at a later period. From a therapeutic point of view the exhibition of sodium salicylate with sodium bicarbonate or some other alkali in large doses would tend to strengthen the theory that chorea is rheumatic in origin, as also would the later administration of aspirin. The common cardiac affections due to an endocarditis have been shown by Osler to be the sequel of a choreic attack. The organ of the body most frequently involved is the heart, and in fatal cases the presence of endocarditis is nearly always demonstrable, the pathological phenomena differing in no particular from that of definite rheumatic origin.

A girl aged 16 was seized with severe pains in her joints, affecting especially those of the right side, the arm being the most painful. The pains were accompanied by a severe tonsillitis. She also had menorrhagia. This definite rheumatic attack subsided almost completely within a fortnight under the usual treatment, when a choreic paresis developed in the arm on the same side as the rheumatic condition. A few days later definite choreic movements were noticed. The condition spread later to the leg. Throughout the whole attack the affection was unilateral, while paresis was more marked than the movements. The affected arm hung by the side, and could with difficulty be raised, the fingers twitched, while the grasp was extremely feeble. The knee-jerks were diminished on the affected side; speech was also affected, but the heart escaped.

The patient was confined to bed and arsenic administered in increasing doses largely diluted, little or no improvement resulting. Aspirin was substituted with marked success; 5 gr., afterwards increased to 10 gr., was given three times a day. Within three weeks from the commencement of this treatment complete recovery resulted.

Twelve months later the patient had another attack of tonsillitis, accompanied by definite rheumatic pains in the right side of the body, this in turn being followed, as before, by paresis and choreic movements, chiefly affecting the arm; in fact, the second attack was an exact repetition of the first, but of a less severe type. The treatment consisted of giving the patient 5 gr. of aspirin, increased in a few days to 10 gr., three times a day. The patient was not confined to bed, and in one month all trace of the condition had disappeared. During the second attack endocarditis developed, as evidenced by a slight systolic murmur heard over the apex of the heart.

The case is interesting on account of the definite rheumatic origin, the fact that the second attack was milder than the first, the development of endocarditis during the second attack, and the successful treatment with aspirin.

Methil, Fife. G. C. Anderson, M.B., Ch B.

Reviews.

ALLBUTT AND ROLLESTON'S "SYSTEM."

When it was announced that the diseases of the nose, the pharynx, the larynx, the trachea, and the ear would be dealt with in a volume by themselves in the second edition of the *System of Medicine*,[1] of which this country has every reason to be proud, hopes were raised that these special diseases would be considered more from the standpoint of general medicine than from that of technique of surgical treatment by the specialist. In the original edition, published in 1897, diseases of the nose and throat were treated of in rather less than 200 pages as part of one of the earlier volumes. In this, the second edition, diseases of the ear have been added, and the three subjects have been allotted a section, which forms Part 2 of vol. iv. The sections introducing the three subjects deal with the methods of examination of the respective regions, but, needless to add, the demand upon the space available for the diseases themselves has made it necessary to curtail considerably this practical part of the work, so much so that it will be of little service either to those who know how to conduct these examinations or to those who are not already familiar with the use of the instruments.

The editors introduce the volume with a prefatory apology for the appearance of "a subject so special, and even surgical, as diseases of the ear" in a *System of Medicine;* but the apology appears to be a little inconsistent in view of the fact that the part on diseases of the ear, taken as a whole, is less surgical than those dealing with diseases of the nose and throat. In an age in which it seems that the ambition of every specialist is to perform My operation with My instruments, and to record My excellent results in My journal, or anywhere and everywhere else, the difficulty of an editor in insisting upon some adequate sense of proportion must be correspondingly increased. In the present volume, which undoubtedly shows some lack of a sense of proportion from the standpoint of the general practitioner, there are serious omissions. The general practitioner does not wish to know how to dichotomize the nasal septum, or how to open up all the accessory sinuses of the nose; what he naturally looks for is guidance as to how he can decide to some extent when such operations ought to be undertaken and the consequences likely to follow neglect to perform them. Within recent years some extremely useful work on the skiagraphy of the accessory nasal sinuses in health and disease has been published, and an article summarizing this work would have been most useful to the general practitioner. We must, inasmuch as we hold a brief for the general practitioner, draw attention to further omissions the supply of which might have benefited our client. Thus, we have been unable to find any information on the relation of ear disease to life insurance. This important subject was discussed at the meeting of the British Medical Association in Edinburgh as far back as 1898, conjointly by actuaries and the Section of Otology. The general practitioner has frequently to decide what conditions of ear disease should determine the weighting of a life, and a section might very well have been devoted exclusively to the question. Again, in the part dealing with diseases of the nose we have been unable to collect all the information we require about what is commonly called "bleeding polypus" of the nose; nevertheless, that part contains a separate section devoted to "Maggots in the Nose," which opens with the statement, "This disease is almost entirely confined to the tropics." Bleeding polypus of the nose at any moment, if not correctly diagnosed, might mislead a general practitioner in these milder climes into a diagnosis of malignant disease. In passing we would draw attention to the views expressed about malignant disease of the nasal cavities as being not altogether in accordance with recent pathological research. Speaking generally, the etiology and pathology of these special diseases throughout the volume have not been treated with the fullness or the scientific method which might

[1] *A System of Medicine.* By many writers. Edited by Sir Clifford Allbutt, K.C.B., and H. D. Rolleston, M.D. Vol. iv, Part 2, Diseases of the Nose, Pharynx, Larynx, and Trachea. Vol. v, Diseases of the Respiratory System; Disorders of the Blood. London: Macmillan and Co., Ltd. 1908. (Med. 8vo, pp. 582. 25s.)

have been expected. The pathology of tuberculosis of the larynx and of the allied regions is sketchy, where a more complete account would in itself have been sufficient to enable the general practitioner to base a rational treatment. Throughout the volume one feels the lack of a co-ordinating influence, which might have found an excellent opportunity of establishing not only a partnership of these special diseases with general medicine, but even a scientific unity. The result is disappointing. Viewed as a textbook, the volume will teach little to those who know little; viewed as an authoritative treatise, so far as we have been able to test it, its information has been found wanting where it would have been most useful to the practitioner.

We are glad to be able to speak in very different terms of Volume v, in which diseases of the respiratory system and disorders of the blood are the subjects dealt with. Both of them have undergone close examination and revision during the past decade, and the editors have called in several new coadjutors to rewrite or to revise those articles which in the course of nine years have become somewhat out of date.

Two articles, dealing respectively with physical signs and aërotherapeutics, by Dr. Hector Mackenzie and Dr. Theodore Williams, have been transferred from other volumes, and will be found especially useful by teachers and demonstrators. A chapter on asthma and hay fever, contributed by Drs. Goodhart and E. I. Spriggs, deals mainly with the true spasmodic asthma of which hay fever is regarded as the purest form, rather than the secondary forms of paroxysmal dyspnoea. The extraordinary variety of conditions which may give rise to an attack goes to prove that peculiarities of nerve centres must be present, and this assumption is supported by the relative frequency of the disease among the more sensitive classes. No better explanation of the actual causation of the dyspnoea has been found than bronchiolar spasm, excited by peripheral, reflex, or central irritation. Warnings with respect to the excessive use of palliative remedies deserve special notice, while the suggestions for prophylactic and curative measures are marked by sound common sense. Dr. William Ewart has supplied a very full and carefully classified account of bronchitis as affecting tubes of varying calibre, and also a chapter on bronchial dilatation. The very complete bibliography from which he has drawn conclusions gives evidence of the labour devoted to the work. A short contribution by Dr. J. J. Perkins on new growths of the bronchi indicates all that is at present known about them. The introduction of the bronchoscope will doubtless lead to earlier diagnosis of growths in the larger tubes.

Dr. A. P. Beddard is responsible for the chapters on the various forms of acute pneumonia, the bacteriology being in the hands of Dr. J. Eyre. The marked increase of knowledge of this aspect of the disease has opened the way to better understanding of the phenomena of crisis and lysis, and the explanation here given, although it cannot be regarded as more than conjectural, affords a basis for future observation and possible advance in treatment. The therapeutic value of vaccines obtained from the actual pneumococcus of the case under treatment is insisted upon by Dr. Eyre as effective in antedating the occurrence of crisis, and so shortening the duration of the illness. The whole section, originally written by Dr. Pye-Smith, is supported by analysis of 7,868 cases, collected from various sources—a sufficiently wide field from which to draw trustworthy averages. Lobular pneumonia is separately described, but we do not find references to the cases of wandering inflammation of the lungs in which the disease appears to run its course at one point before it appears in another area of the same lung. Dr. John Fawcett has revised Dr. Pye-Smith's paper on chronic interstitial pneumonia, drawing largely upon the records of Guy's Hospital for illustrative cases. The difficult question of the treatment of pulmonary abscess is discussed, on the basis of a very large bibliography, by Dr. J. J. Perkins. Pulmonary tuberculosis is described at no undue length by Drs. Percy Kidd, Bulloch, and Bardswell. They have set down in clear terms all the facts at present known as to the disease as a whole, analysing all that is best in recent work in every department of the subject. Dr. Bulloch examines the important question of the paths of entry of the tuberculous poison, and comes to the conclusion that infection by inhalation is far more frequent than by ingestion, but at the same time demonstrates that the spread of the disease within the body is mainly effected by lymphatic channels. The diagnostic value of cutaneous and conjunctival inoculation has not been conclusively proved. The long series of experiments which have led up to the present views on inoculation, controlled by the opsonic index, as a means of treatment are very fully described. The enthusiasm of the bacteriologist is not always shared by the practical physician, but results have shown beyond a doubt that the employment of smaller dosage and the avoidance of reaction undeniably produce improvement without the dangers and drawbacks of the more heroic methods.

Dr. Kingston Fowler, in a paper on syphilis of the lung, shows clearly the present limits of knowledge with respect to it. Sir Thomas Oliver's paper on pneumoconiosis has been rewritten, and reflects a vast amount of experience and observation among mining communities in all parts of the world. Diseases of the pleura are fully dealt with by Dr. S. West and Dr. T. J. Horder, who have revised the original article by Dr. Gee. New growths and other affections of the mediastinum are presented by Dr. Frederick Roberts and Dr. C. Bosanquet, the latter recording the results of modern investigations with regard to the thymus, which for the present remain inconclusive.

The concluding third of the volume is devoted to those conditions which are well described as disorders of the blood. Much new work is recorded by Sir T. Clifford Allbutt, who happily combines the experience of the scientific worker and the clinical observer, in his article on chlorosis; by Dr. Herbert French, who discourses on pernicious anaemia, showing the retention of iron in the liver and kidneys in a very convincing coloured plate; and by Drs. Hutchison, Ledingham, and Muir on the various degrees of anaemia. An interesting account is given by Dr. A. E. Garrod of the condition now known as enterogenous cyanosis, in which the haemoglobin of the living blood becomes altered from within or from without, the ultimate poison formed within the body being hydrogen sulphide. Papers on purpura, scurvy, and haemophilia conclude a volume which cannot but enhance the high reputation deservedly earned by the previously-issued portions of the new edition of the *System*.

OPHTHALMOLOGY.

ANOTHER edition has been published of the version in English of the useful *Atlas of Ophthalmoscopy and Ophthalmoscopic Diagnosis*, by Professor O. HAAB, of Zurich.[2] It is the second American edition, translated from the fifth revised and enlarged German edition, and is edited by Dr. DE SCHWEINITZ, of Philadelphia. It has been brought up to date, and some fresh chromolithographs have been added from the collections of Professor Haab and Dr. de Schweinitz. Altogether it now contains 152 lithographs. The first eighty-seven pages comprising the text include, besides the introduction, a description of the ophthalmoscope, of examination by the direct and indirect method, of the method of measuring refractive errors, a detailed account of the way to conduct an ophthalmoscopic examination, and a description of the normal eye ground and of pulsating phenomena. The rest of the book is devoted to beautiful coloured ophthalmoscopic drawings, and to a description of the cases from which they were made. As a hand atlas it is second to none. For teaching purposes it is of the greatest use, while it will serve to impress upon the student the sort of thing he has to be on the look-out for when examining ophthalmoscopic cases. We can heartily recommend it to both teachers and practitioners.

A companion volume, Professor HAAB'S *Atlas of External Diseases Eye, including a Brief Treatise on the Pathology*

[2] *Atlas and Epitome of Ophthalmoscopy and Ophthalmoscopic Diagnosis.* By Professor O. Haab, of Zurich. Second American edition, from the fifth revised and enlarged German edition. Edited by G. E. de Schweinitz, A.M., M.D., Professor of Ophthalmology in the University of Pennsylvania. Philadelphia and London: W. B. Saunders Co. 1909. (Cr. 8vo, pp 87; 152 coloured lithographic illustrations. 13s.)

and Treatment,[3] has now run to a third edition, and great credit is due to Dr. de Schweinitz, of Philadelphia, the editor, for his care and skill in translating it, and for thus putting it at the disposal of hundreds of students and practitioners whose knowledge of German is elementary. A description of the various methods of examining the eye in disease is followed by an account of the regional diseases, lacrymal apparatus, eyelids, conjunctiva, cornea, sclera, iris and ciliary body, lens and vitreous; of glaucoma, and finally diseases of the orbit are discussed. The beautifully coloured illustrations, numbering 101 on 46 plates, are too well known to need any description, though some of these in this edition are new. It is, of course, difficult to learn much of disease from pictures only, but the drawings are lifelike, and the book will be a very real help to those studying diseases of the eye, especially to those who have only limited clinical opportunities. These hand atlas series are far more useful, far cheaper, and altogether more within the range of students than the ponderous volumes of the older atlases.

Some stereoscopic pictures are published by Dr. R. PERLIA, oculist at Crefeld,[4] accompanied by directions and description which show the author to be by no means familiar with the method in which squints usually develop. He states that "squinting is caused by short or long sightedness, also by weakness of the optical nerves—a squinting eye is excluded from the power of seeing. In consequence of its not being used its power of sight diminishes more and more, till at last it is only able to distinguish objects quite near at hand." We should have thought that every one would have known and agreed that amblyopia is usually caused by a failure of development of the visual faculty of an eye, not by a retrograde movement after full development. The pictures are not truly stereoscopic ones, and are inferior to many already in the market.

Dr. E. WÖLFFLIN of Basle has brought out a set of charts for the registration of defects of the eye muscles,[5] consisting simply of nine identical squares on each chart, with a red mark in the middle. Each of these nine squares is divided up by vertical and horizontal lines into 144 squares, in which the defects can be accurately and graphically reported. At the side is a space left for the patient's name, the diagnosis, date, and remarks.

PULMONARY TUBERCULOSIS.

DR. GAUSSEL has written a very readable book on the treatment of pulmonary tuberculosis.[6] He gives first a classification of the various clinical forms of consumption, which would, perhaps, lose nothing of its value by some judicious compression. The precautions necessary for prevention are mentioned, and then the various requirements for successful treatment are carefully discussed. In the chapter on antispecific medication there is a very interesting summary of the different attempts—for the most part unsuccessful—which have been made in the direction of vaccination against tuberculosis, and of the various tuberculins and serums which have been employed in treatment. The author concludes that we do not yet possess either vaccine or serum which is really specific against tuberculosis, the very multiplicity of such remedies being a proof of their non-efficiency. Climatic treatment is very fully considered, and a very good tabular scheme is given showing at a glance the kind of climate which is likely to be best suited to each variety of pulmonary tuberculosis. To many of those who practise the open-air treatment in this country the advocacy of fresh-air requirements will seem somewhat timid. The majority of patients will not run any risk of keeping the bedroom window open without the gradual acclimatization to fresh air recommended by the author. After discussing the medicinal treatment of symptoms and of various complications and associated diseases, the author describes sanatorium treatment, and gives a useful list of sanatoriums in France, whether for paying patients or for the poor. Finally, there is a chapter devoted to the questions of the treatment of tuberculous patients in the hospitals, antituberculosis dispensaries, and of social prophylaxis against the spread of consumption. The book is a reliable and useful guide to the modern treatment of the tuberculous.

This account of the modern methods for the solution of the tuberculosis problem given in Dr. KNOPF'S *Tuberculosis a Preventable and Curable Disease*[7] is very complete, but its thoroughness is to some extent a disadvantage in a book intended, as the preface informs us, for the public. It is perhaps necessary for the expert to view everything in relation to his special subject, but the ordinary layman may take fright at the idea that every detail of his daily life requires carefully watching if he would escape disease. The early part of the book is excellent; the necessary information as to the causation of tuberculosis is given in simple language; there are good, common-sense rules on the selection of climate, and clear, comprehensive directions for consumptive patients. When we come to administrative precautions we become overwhelmed with the details of the requirements for checking tuberculosis, till the feeling grows that all private, commercial, and municipal life must be subservient to that one object. The recommendations are excellent, and will repay study by the sanitarian; but we hesitate to recommend the perusal of such details to the consumptive patient or his friends.

TROPICAL MEDICINE.

THE literature of tropical medicine is suffering at present from an over-production. Some of the work is good, most indifferent. *Blackwater Fever*,[8] by Dr. NEWELL, belongs to the latter category. The author believes blackwater fever to be of malarial origin, and talks of this belief as his own theory in Chapter IV, but such an idea has been commonly accepted for at least the last twenty years. He explains away the real difficulty, why some intensely malarial districts should be quite free from blackwater, much too airily. He says:

> Why some malarial districts seem to be free of blackwater fever may be accounted for by the absence of the malignant tertian parasite there, or the absence of the "special malignancy" of this variety of parasite in that district. All malarial districts are not equally malarial, nor are all *highly* malarial districts equally *highly* malarial, or, in other words, all highly malarial districts need not contain very malignant parasites, malignant to the same degree.

How does the author propose to account for the fact that infection by malignant tertian and quotidian parasites form over 90 per cent. of the malaria in the districts he speaks of, and that people die in large numbers with pernicious symptoms? Writing of mortality, he says (p. 39) that there should be none, yet in the very next breath he admits that some of his native cases died either because they were seen too late, had too little stamina, were unwilling to take fluids, or had great fear. But cases of this disease do die, however expert the medical attendant, and however expert the nursing may be. In Chapter II, among cases of blackwater fever, we find one (Case 4, p. 73) of kala-azar, and why it should find a place in the series it is difficult to understand. The author believes that he has found a new parasite, evidently of the nature of a trypanosome (not the Leishman-Donovan body), in this disease (p. 76). Artefacts are numerous in microscopic work, and not always easy to distinguish from real parasites. Some of the observations on treatment will be found useful, but on the whole, however, the matter contained in the book is disappointing.

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[3] *Atlas of the External Diseases of the Eye, including a Brief Treatise on the Pathology and Treatment.* By Professor Dr. O. Haab, of Zurich. Authorized translation from the German. Third edition revised. Edited by G. E. de Schweinitz, A.M., M.D., Professor of Ophthalmology in the University of Pennsylvania, etc. Philadelphia and London: W. B. Saunders Company. 1909. (Cr. 8vo, pp. 240; 101 coloured lithographic illustrations on 46 plates. 13s.).

[4] *Kroll's Steriokopische Bilder zum Gebrauche für Schielende.* Seventh revised edition. By Dr. Perlia, oculist of Crefeld. Hamburg: L. Voss. 1909. (Fcap. 8vo. Tafeln 28. M. 3.)

[5] *Schemata für Augenmuskellähmungen.* By Dr. E. Wölfflin, Privatdozent of Eye Diseases in the University of Basle. Wiesbaden: J. F. Bergmann; Glasgow: F. Bauermeister. 1907. (Cr. 4to, 25 Blatt in Mappe. 3s.)

[6] *Traitement de la tuberculose pulmonaire.* Par Dr. A. Gaussel. Montpellier: Coulet et Fils. 1909. (Post 8vo, pp. 340. Fr. 5.)

[7] *Tuberculosis a Preventable and Curable Disease.* By S. A. Knopf, M.D. New York: Moffat Yard and Co. 1909. (Demy 8vo, pp. 426. $2.00.)

[8] *Blackwater Fever (Bilious Malignant Tertian Ague).* By A. G. Newell, M.D. (Glasgow), C.M., L.M., D.P.H.Cantab. London: John Bale, Sons and Danielsson, Limited. 1909. (Demy 8vo, pp. 134. 5s.

The medical reports of the German colonies for the years 1906–07, 1907–08 are interesting,[9] and are published by the German Colonial Office in the convenient form of a single volume, so that reference to any individual colony and to the diseases found therein is simple. The system might with advantage be followed by the British Colonial Office. The colonies dealt with are German East Africa, the Cameroons, Togoland, German South-West Africa, New Guinea, the Carolines, Marshall Island, and Samoa. Some of these are healthier than the others, for certain tropical maladies prevail extensively in the African colonies. In East Africa, for example, almost every tropical disease is met with. In the interior sleeping sickness is common, while malaria and blackwater fever prevail extensively throughout the whole area. Two cases of Malta fever are also noted in the 1907–08 report, and many other diseases, such as leprosy, yaws, beri-beri, bilharzia, elephantiasis, and ankylostomiasis. A veterinary report by Dr. Lichtenheld is included; it deals with coast fever—which is common—other piroplasmoses, tsetse flies, trypanosomes, rinderpest, and general diseases of animals. A photograph of the Government Hospital at Daressalam shows a handsome building, and indicates that the Government officials or others will be well looked after and housed when ill. Passing to the Cameroons, a point to be noted in the 1907–8 report is that the prevalence of blackwater fever still continues, though the death-rate has fallen; there were 22 cases with 3 deaths, giving a percentage of 13.6; 3 cases of Malta fever are described, indicating that this disease probably prevails all over Africa; sleeping sickness is rare, very few cases having been met. Photographs are given of some of the hospitals, and these again show well thought-out and well-designed buildings. From Togoland a case of yellow fever is reported, and other tropical complaints are also common there. German South-West Africa, being farther south, is heathier than the colonies already mentioned, but malaria prevails fairly extensively. German New Guinea, in addition to malaria, has also beri-beri to contend with, while Samoa and the other islands might be termed comparatively healthy. A list of publications by German doctors in the services abroad is published at the end of each volume, and this, together with the full and well-arranged reports from the different areas mentioned, indicates that much good work is being done by Germany in tropical medicine.

NOTES ON BOOKS.

MR. H. GODFREY'S *Elementary Chemistry*[10] is intended to afford an introduction to the subject suitable for an ordinary school course, and aims at supplying a general elementary acquaintance with the subject. It is written in an attractive style, and well garnished with illustrations. The main part of the book is divided into thirty chapters, each intended to represent the work of a single week, commencing with the fundamental conceptions of elements and compounds, atoms and molecules, and passing, after a short account of the commoner inorganic substances, to simple organic chemistry and the general nature of foods and clothing materials. The method is didactic throughout, and no suggestion appears to be made that the student should observe for himself or reason from his observations. The book is well adapted for its avowed purpose, and will be useful as an aid to acquiring general information, but should not be used by those intending a serious study of chemistry.

Numbers iv and v of the ten annual volumes of the well-known *Practical Medicine Series*[11] deal respectively with *Gynaecology* and *Obstetrics*, the editors of the former being Professor E. C. Dudley, of Chicago, and Assistant Professor C. von Bachellé, and of the latter Professor J. B. de Lea, with Dr. H. M. Stowe as collaborator. Both volumes are freely illustrated. Professor Lea, in his summaries of important papers published during the past twelve months, adds, in many cases, a brief note as to his own practice in circumstances allied to those discussed.

[9] *Medizinal-Berichte über die Deutschen Schutzgebiete Deutsch-Ostafrika, Kamerun, Togo, Deutsch-Südwestafrika, Neu-Guinea, Karolinen, Marshall-Inseln und Samoa, für die Jahre 1906–07, 1907–08.* Herausgegeben vom Reichs-Kolonialamt. Berlin: Mittler und Sohn. 1908, 1909. Ernest Siegfried. (Roy. 8vo, pp. 324 and 528. M. 7.50 and M. 9 respectively.)

[10] *Elementary Chemistry.* By Hollis Godfrey. New York and London: Longmans, Green and Co. 1909. (Post 8vo, pp. 470; 105 illustrations. 4s. 6d.)

[11] The *Practical Medicine Series*, 1909. Edited by G. P. Head, M.D. Vols. iv and v. Chicago: The Year Book Publishers; and Glasgow: G. Gillies and Co. (Cr. 8vo, pp. 225 and 236 respectively. 5s. each)

THE SIXTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

BUDAPEST, AUGUST 29TH TO SEPTEMBER 4TH.

(*Continued from page 709.*)

GENERAL ADDRESSES.

MENTION has already been made of Professor Kutner's and Professor Hollander's lectures on Sunday afternoon. On Monday Professor BACCELLI delivered a lecture on the importance of intravenous medication. The lecture reviewed the position of the injection of potent drugs and medicaments into the venous system, and included a full account of the part which the author played in the introduction of the method. It was much applauded by a large audience.

Cancer Research.

On Tuesday afternoon, in the lecture theatre of the National Museum, Dr. BASHFORD gave an excellent demonstration on cancer in man and animals, illustrated by a very large number of lantern slides. The speaker had prepared a set lecture, and this was printed in the transactions of the Congress, which will be published at a later date, but preferred to explain his points by short accounts of the significance of each slide. He spoke in English, but was well understood by the majority of those present. The chief points which he sought to establish were as follows: In the first place, he showed that cancer is not limited to white men. Slide after slide showed the macroscopic and microscopic appearances of malignant neoplasms discovered in the coloured races and in many vertebrate animals. He showed that cancer is not, as is usually supposed, rare in any quarter of the globe; 25,000 deaths from it occur annually in Japan, and it is to be found at any time in West Africa, India, Nigeria, Egypt, and elsewhere. Statistical tables demonstrated that the established frequency of the diseases varies in direct proportion to the thoroughness of the statistics, and that in those parts where statistics have improved, and where the means of recognizing and recording the occurrence of cancer have become sharper, the apparent frequency of the disease has increased. Dr. Bashford suggested that the diseases were not really increasing, but were being more universally recognized when they occur. He passed on to the consideration of cancer in the lower animals, and demonstrated the nature of carcinoma and sarcoma as met with in the various species. The possibility of experimentally reproducing the disease in mice and other animals was then described, and the course of the disease thus transplanted was briefly demonstrated. The analogies between the cancers of rats and mice and those of man were dealt with. Perhaps the most striking analogy, after that of histological structure, is that of age incidence. Dr. Bashford summed up this by stating that statistically cancer is a function of age and biologically a function of senescence. These points were brought out by means of tables and diagrams. The experiments on mice showed that cancer grew better and more rapidly in young individuals than in old ones, although the susceptibility to the disease was greater in old animals or human beings than in the young. Next he sought to explain the determination of the site of a cancer. With regard to the intestinal tract, males were exposed to chronic irritation of the upper end (mouth, lips, tongue, etc.) more frequently than were women, and the cancer incidence in this situation was greater in them. In the same way, the chronic irritation of the female pelvis accounted for the greater frequency of cancer of the lower end than was the case in males. Mice appeared to obey the same laws in this respect, and the overwhelming frequency of mammary cancer (spontaneous) in mice corresponded to a similar condition in human beings. The question of sex was dealt with in this connexion. Next Dr. Bashford turned his attention to heredity and infection, and demonstrated that while there was no evidence of a congenital origin of the disease, there could be no doubt that the disease occurred in those situations which were most exposed to irritation. Slides demonstrated the occurrence of cancer of the skin of the abdomen in Kashmiris, who are accustomed to wear a charcoal oven against the belly; and that cancer of the inside of the mouth is common in Ceylonese and Indian women who chew betel nut. The arguments against an infective causation of cancer were numerous. The mere fact

that in some 200,000 mice in his laboratories not a single instance of the infection of one mouse to another had been found, in spite of careful observation, supported this view. He was able to discount much of the evidence offered in support of the epidemic or endemic nature of the disease. He then dealt with the immunity produced experimentally with regard to mice and rat cancers. The immunity was specific and the inoculation of a tumour from a rat into a mouse would not protect against a mouse cancer. The tissue of the animal itself or of embryonic tissue of the same species induced this protection, while freezing and grinding robbed the tissue of its protecting properties. Many other points of equally interesting nature were reported, and the lecturer concluded by remarking that the hopelessness in respect of this disease which was felt but a few years ago was no longer justified, although he warned his audience against expecting that the etiology of the disease would be clearly made out soon. The work was so difficult that time must elapse unless an unlikely accident revealed it suddenly. The lecture, which was listened to by a large audience, was loudly applauded.

Artificial Parthenogenesis and Formative Stimulation.

On Wednesday evening Professor Loeb, of the Berkeley University in California, delivered a highly interesting lecture on artificial parthenogenesis and its relation to the physiology and pathology of the cell. The theatre was well filled, and much speculation was noticeable before the lecturer began his discourse. In introducing his theme, he made it clear to his audience that he regarded all vital processes as evidence of chemical and physical changes in the cell. He did not accept the usual opinion that it would lie outside the realm of possibility to impart life to dead substance, but conceived the idea that if all the processes were in reality physico-chemical, then a minute study of natural processes must reveal the kind of change, and that such changes could be imitated by chemico-physical means. He especially directed his attention to the nature of formative stimulation and agreed with Virchow, who believed that the prototype of this stimulation was to be sought in the fecundation of the ovum. What caused the ovum to divide and develop into a separate entity would cause all life processes in any cell. He therefore set to work to investigate the fertilization of the ovum. In practically every case the ovum sooner or later died, if it did not become fertilized by a sperm cell. He described the action of the spermatozoön as a life-saving one. In the first place, he attempted to fructify the ovum by means of extracts of sperm cells. This failed until he applied the extracts of sperm cells of a foreign species. This extract kept the ovum alive and led to changes similar to those of the preliminary stages of fertilization. He experimented with the eggs of the Californian sea urchin. In this case the formation of the so-called membrane as the result of the penetration of the sperm cell was well marked. He found that the action of the sperm cell was two-fold. The membrane was only formed after a sort of lytic process had taken place and the spermatozoön had acted on the medullary layer in a peculiar manner. In order to understand this the better he attempted to imitate it. First, he placed the eggs in sea-water containing a fatty acid. No membrane formed, but on transferring them later to sea-water rendered alkaline with additional alkaline hydrate the eggs formed an excellent membrane. During the time following this formation the ova underwent those changes which were associated with further development, and which led up to cell division. It thus appeared that the fatty acid did not suffice to cause the membrane to form; the ovum must be exposed to the action of a solution of higher tonicity than the protoplasmic fluid. He further found that any cytolysin —for example, saponin, benzol, ether, chloroform, and many others—was able to act instead of the fatty acid. Loeb therefore concluded that in artificial parthenogenesis the first stage necessary was the partial solution or precipitation of a substance in the superficial layer of the ovum, probably a lipoid, by means of the cytolysin. This would explain why the extracts of the homologous sperm cells failed to fertilize, while the heterogeneous extracts did so. The barrier to the penetration into the medullary layer of the ovum of the substance which produced the formative stimulation, and which was to be found in the substance of the sperm cell, but which could be substituted by a hypertonic solution, was then removed, and the membrane resulted in response to the internal action of the hypertonic fluid or equivalent substance of the sperm cell. He was following out the further steps of the process, but had not yet been able to state on what chemical changes the ultimate cell division depended. He discussed the importance of studies of this kind for the pathology as well as for the physiology of the cell.

Tropical Diseases.

On Thursday afternoon Professor Laveran delivered an excellent lecture on the development of knowledge of the etiology of tropical diseases and their prevention. He gave a complete and critical survey of the work done within the past few years. The various stages in the history were mapped out by landmarks—the discovery of a new parasite or a new intermediary host—and the whole pieced together will form a valuable guide for further investigations.

Inheritance, Selection, and Hygiene.

Professor Gruber, of Munich, spoke on this subject on Friday afternoon. The lecture was of a highly philosophical nature and roused great interest. He started from the thesis that hygiene in its modern form must act directly against the process of selection which Nature tended to carry out. Darwin's doctrine of natural selection resulting from the struggle for existence had to be examined in the face of the endeavour to remove those noxious agents which led to a weakening of the individual. He propounded the question whether modern hygiene was not attempting a vain task to overthrow the relentless decree of Nature. In order to answer this question thoroughly, it became necessary to consider carefully the factors which led to inherited and also to acquired weakening. The congenital inabilities revealed themselves often late in life in the shape of sterility, atrophy of the mammary glands, alteration of the sensory spheres, etc. These deteriorations depended on changes in the parental plasma, and could only be attacked through succeeding generations. The acquired noxae included damage to the protoplasm of the embryo during the various stages of development, damage to the functions during later life, by alcohol, syphilis, and the like, and by infective processes, including tuberculosis. On the other hand, it would be possible for hygiene to undertake a control of the race in such a way that the individual would be protected against those noxae which otherwise would lead to his weakening and eventual destruction. Gladstone had stated that the medical man might become the protector of the race. If hygiene was to perform its proper task of removing those noxae which weakened the congenitally weak or the infected members of the race, then Gladstone's prophecy would certainly come true.

The Valley of the Vag.

Professor Siegmeth delivered an interesting lecture on the climatic, geological, and scenic peculiarities of the valley of the Vag and the high Tatra.

Combined Sessions.

Appendicitis.

The Sections of Surgery, Medicine, and Gynaecology held a combined session for the discussion of appendicitis. The papers and discussions occupied two mornings. This discussion turned out to be of great value, and the debate between those surgeons who regarded operative treatment as the proper treatment for all cases, those who preferred to operate only within forty-eight hours and then only in selected cases, and the physicians who wished to treat the majority, if not all, appendicitis cases without surgical intervention became almost exciting. From an early period it became evident that the first-named school of surgeons would suffer defeat, and the battle between the two remaining schools was hotly contested. The conservative physicians appeared to win the day, and, at all events, an effective check has been put on the tendency to operate too frequently.

Lenhartz (Hamburg) opened the discussion. While he acknowledged the excellent results obtained in the early stages with operative treatment, he considered that the diagnosis in the early stages often presented great difficulties. In these circumstances he could not support the doctrine of operating early in appendicitis, more especially since medical treatment had in his hands given excellent

results. Rest, the withholding of all food by the mouth, and the administration of sedatives, were the measures which he employed. He dealt especially with appendicitis of gynaecological origin, and illustrated his views of the pathology by means of histories of cases. With regard to puncture, he believed that abscess formation could be diagnosed by that means, but he realized that care must be exercised in carrying this out. He had had no untoward results. He objected to operative treatment in the interval, and finally only admitted the surgeon for cases of sudden onset, with signs of acute general peritonitis. SONNENBURG (Berlin) regarded the catarrhal form, which was associated with symptoms of faecal retention, as an illness which tended to run a favourable course without operation. A dose of castor oil was the best treatment, and he was of opinion that there was no tendency for these cases to recur. When the retention could not be relieved soon, and virulent infection was present, the inflammation soon spread, gangrene, perforation, and peritonitis were met with, and the only chances for recovery lay in early operation. But the diagnosis in these cases was difficult at first. The peculiar blood changes, described by Arneth, together with the temperature and pulse curves, as well as the local and general symptoms, however, rendered diagnosis possible, and it was just this improved diagnosis which made early operation in all cases no longer necessary. He had obtained excellent results in the catarrhal cases without operation, while in his selected cases the mortality after operation had been reduced to 31 per cent. A communication from the late Professor ROSTHORN (Vienna) was read, in which the author had recorded his views as a gynaecologist. He, too, had regarded the advisability of interval operations as doubtful. WALTER (Paris) pleaded for operation within the first twenty-four hours. His cases treated in this way had all recovered. The diagnosis, however, must be certain. SEGOND (Paris) also favoured early radical treatment. HARTMANN (Paris) had obtained good results by early operation, and supported those who wished to submit each case to surgical treatment, when the diagnosis could be made within forty-eight hours. SCHNITZLER took a more moderate view, and was of opinion that only certain cases were suitable for operation, and those only when the diagnosis could be made early. FABRICIUS (Vienna) tried to tempt the gynaecologists to operate more freely; and MURPHY (Chicago) advocated the limitation of surgical intervention to acute cases in the initial stages. KÜMMEL (Hamburg) still adhered to the older fashion of operation in practically every case, although he recognized that it was difficult in many cases to make a correct diagnosis and prognosis. BOURGET (Lausanne) did not regard operation as necessary, and claimed to have obtained better results without surgery than the surgeons had obtained by operation. BÖERO (Buenos Aires) also had obtained better results without operation; while HAGEN-DORN (St. Petersburg) urged the limitation of surgical treatment to certain selected cases in the earliest stages. MORRIS, HERCZEL, REYMOND, GIORDANO, and MARAGLIANO also spoke. RIVIÈRE (Paris) advocated internal treatment, including calomel, castor oil, rest, and starvation, and declared himself opposed to surgical intervention in the majority of cases. LUCAS-CHAMPIONNIÈRE (Paris) was willing to admit that the modern surgeon was too fond of the knife, and that the surgeon should individualize and only operate in selected cases. He did not approve of puncture. He realized the difficulty of making early diagnoses with certainty, and then discussed the form of operation which gave the best results in fulminating cases. WOHLGEMUTH illustrated the dangers of puncture by relating the history of a typical case. WOLFF (Potsdam) limited his remarks to the question of the removal of the appendix, which he advocated, in spite of the opinion generally expressed by surgeons that in acute cases little good was done by the removal. In his reply, LENHARTZ summed up the discussion by pointing out that the last straw on which the surgeons could rely in favour of operative treatment was a correct and early diagnosis, and this was admittedly extremely difficult. His results had been better than those which the most skilled surgeons had obtained. SONNENBURG attacked Lenhartz only in respect to puncture, and WALTER held tenaciously to his doctrine of early operative interference.

Immunity.

On Tuesday morning a discussion on anaphylaxis attracted a considerable number of members. BESREDKA (Paris) dealt with the problem of the prevention of the symptoms of hypersensibility. He explained briefly the nature of anaphylaxis to serum, as seen in the laboratory. When a guinea-pig was given a small injection of serum, and after ten days or longer a dose of 5 c.cm. a fatal result was produced, although 15 to 20 c.cm. did not harm a normal animal. After referring to the symptoms which had been observed in man, he detailed the means which enabled the experimenter to prevent a second injection of serum from producing "accidents." Heating the serum to 56° C. for one hour on four consecutive days attenuated the toxic nature of the serum, but did not remove the danger completely. Serum heated to 80° C., if applied preventively, conferred a certain and lasting immunity, but its establishment was slow, and a reaction took place, which was not desirable. Anaesthesia with ether, or, still better, with alcohol injected subcutaneously, intraperitoneally, or by mouth or rectum, conferred a complete but transient immunity. The best means of protecting animals against anaphylactic symptoms, however, proved to be that described by the speaker as anti-anaphylaxis. This might be done either by injecting the serum prophylactically into the rectum, or by giving it in very small doses subcutaneously. A second injection of serum given within forty-eight hours of the first conferred protection against a subsequent injection even if this were given weeks or months after. DETRE (Budapest) regarded anaphylaxis as a mesodermal reaction. The albumen introduced caused the mesodermal ferments to act through some intermediary products of the partially split up proteid. Hitherto the theories offered in explanation of the phenomenon were: (1) Pfeiffer's lysin production theory, by which it was meant that the introduction of the foreign serum produced an antibody, through which the toxic properties of the proteid could act. (2) Friedberger's theory, according to which the phenomenon depended on the formation of sessile receptors, which, according to the introducer, were those of precipitins, but which, according to Dörr and Russ, were of a different nature. In defending his own views, he cited a case of a patient who was treated by a serum given in doses of 10 c.cm. each third day. After the fourth injection the last site of injection began to swell, became inflamed and oedematous. The patient showed a violent reaction. Shortly after, the third injection site began to react, later the second, and finally the first. He considered that the antigen (that is, the albumen of the serum) reacted best and immediately where there was the greatest amount of antigen. The experiments of Besredka, he contended, proved that the greatest concentration of antigen was to be found in the mesodermal cells. In support of his views, he further quoted the experiments of Victor Vaughan with egg white split up by means of alcoholic solutions of sodium hydrate. He considered that in the anaphylactic phenomenon three factors had to be taken into account: (*a*) the digestive ferments of proteids; (*b*) the altered power of reacting on the part of the cells; and (*c*) the individual variation in the sensibility of the cells. In the second part of his discourse he dealt with the tuberculin reaction and the reaction in tuberculosis, as explained by his theory. FRIEDBERGER attempted to defend the precipitin theory which he had published within the past year. His argument in favour of the reaction product being of the nature of a sessile precipitin receptor was based partly on direct experimental evidence and partly on inference with regard to the disappearance of complement which was observed with demonstrable forms of precipitin. He did not wish to convey the impression that the symptoms which killed the animals were due to a mechanical action of precipitated proteid, but insisted on the identity of the reaction product and precipitin, in spite of the fact that precipitin had not been demonstrated in the experiments described by the American and German observers. NEUFELD (Berlin) spoke of the danger of intravenous injections of serum, and stated that it appeared that Besredka's suggestion of previously giving a small dose subcutaneously would prove satisfactory in human subjects. It was, however, still a matter of doubt whether there existed a real parallelism between the phenomenon in human beings and that in guinea-pigs. In

criticizing the work of Friedberger, Dörr, and Russ, he was tempted to identify the substance which they regarded as precipitin or, at all events, as forms of sessile receptors, with what was described by the French school as *sensibilisine*. He could not accept the sessile receptor theories, and warned against all theories which did not fully explain the phenomenon of passive anaphylaxis. Citron denied that precipitin took any part in the matter. He did not regard anaphylaxis as a simple process. He believed that the sessile receptors increased, and, further, that the normal protective power of the wandering cells became neutralized. Lastly, he recognized a special hypersensibility of the cells. Von Pirquet (Vienna) dealt with the matter from a clinical point of view. Anaphylaxis, he stated, was an artificial condition, produced either in the laboratory or by means of those forms of treatment which depended on laboratory production. In rare cases, as in the case of bee-stings, etc., it might be produced naturally. He was inclined, however, to regard some forms of intoxications from the gastro-intestinal canal as examples of this. He did not agree with Detre's explanation. Sleeswijk (Brussels) argued on technical grounds against Detre's views. Pfeiffer (Königsberg) also spoke. Armit (London) pointed out that Detre had built up his view partly on Victor Vaughan's experiments, but that he was able to show that these experiments were not sound. He had obtained negative results on repeating Vaughan's experiments. While he agreed with Citron that the explanation was not simple, he expressed himself dissatisfied with every one of the theories which had been put forward up to the present. An amusing passage of arms, or rather words, then took place between Citron and Friedberger, after which Besredka replied briefly, and Detre again attempted to obtain support for his views.

Neufeld (Berlin) read an interesting paper in which he summarized his views regarding the bacteriotropic substances of serum. He explained the reasons why Metchnikoff's views on phagocytosis could no longer be accepted, and detailed the difference between his own views and those of Sir Almroth Wright on the action of the serum in accelerating phagocytosis. These views have already been published elsewhere.

Gruber (Munich) read a highly important paper on the virulence of bacteria. He based his remarks on his observations on anthrax bacilli. In the first place, leucocytes were capable of killing the bacilli under certain conditions. Next, the lymph obtained as a result of irritative lesions imparted to the leucocytes an increased power of destroying the bacteria. But if anthrax bacilli were sown on rabbit plasma and leucocytes, they showed luxurious growth. However, if blood plates were brought into contact with the bacteria, no growth took place. The whole process depended on the formation of a capsule. Capsulated bacilli resisted the bactericidal action of the lymph and blood plates, and were in that condition which was called virulent. Phagocytosis and surrounding of bacilli, no doubt, influenced the fate of the host, but these measures were of small consequence. If capsulated anthrax bacilli were emulsified in plasma containing blood plates, the growth was good, but if the capsule was destroyed, even if no direct bactericidal action or destruction was effected in the solution, the growth was immediately inhibited in the above-named emulsion. Such a solution of the capsule could be effected by pyocyanase. Bacteria which had been treated with 6 per cent. pyocyanase solution became robbed of their capsules. Next he turned his attention to the behaviour of anthrax bacilli in the guinea-pig organism. The guinea-pig was far less resistant toward the bacilli, and the cumulative action of the bactericidal substances, the phagocytosis and the surrounding of bacilli was not sufficient to kill off even non-capsulated anthrax bacilli. As a curious condition, Gruber mentioned that when mouse serum was mixed with anthrax bacilli, then centrifuged and well washed and subsequently emulsified with guinea-pigs' leucocytes, many of the bacilli died. On the other hand, *in vitro* experiments would lead the bacteriologist to suppose that the alexin of the guinea-pig was capable of acting bactericidally on anthrax bacilli. The contradiction required explanation, and this he found experimentally. No bactericidal action took place when guinea-pigs' blood was kept moving (in the shaker), but the action was marked when the fluids were at rest. The paper was loudly applauded.

Preiss (Budapest) started the discussion. At first he apparently misunderstood Gruber, and some time elapsed in backward and forward questioning and answering before the speaker fully grasped the situation. His views were that phagocytosis did not play a part at all in determining the virulence of a bacillus. With regard to the capsule, he stated that he had never seen an anthrax bacillus without one, but regarded the capsule as indicative of the virulence, in so far as its thickness and toughness were concerned. Pfeiffer (Königsberg) expressed doubts as to the rôle which the capsule was said to play. He believed in a definite anthracidal substance, and was of opinion that the formation of the capsule was secondary to the effect of this substance. Detre (Budapest) spoke of his work on this subject, and summed up his views, which he based on his own work as well as on the work of Bordet, Denys, and others. He especially pointed out that after phagocytosis no trace of digestion of the bacteria was discernible, and then discussed the effect of massive capsule formation. He agreed in the main with Gruber. Baumgarten, Lubarsch, and others also took part in the discussion. Gruber replied briefly, and was cordially thanked after his reply.

In the absence of Professor Bordet, Dr. Sleeswijk (Brussels) was requested to read Bordet's prize work on the mode of action of immunizing substances. The interest in the paper was greatly lessened by the absence of the author, and for this reason no discussion took place.

Professor Ehrlich was also prevented from attending the Congress, and his paper on the protective substances which are normally present in human serum was not read.

The Sections.

Anatomy and Histology.

Laguesse (Lille) spoke in favour of the theory of a true *balance between the islands of Langerhans and the acini of the pancreas*. He showed that there was anatomical continuity between the two, and, further, between the islands and the excretory canals. In certain points the intimate mixture of the endocrinic and exocrinic elements was such as to suggest a transitory condition: it was possible to produce an enlargement of the islands experimentally which was dependent on changes in the true parenchyma, and the same condition had been observed at times as the result of pathological changes. Mankowsky and Waldeyer took part in the discussion, agreeing in the main with the views put forward by the author.

Hammer (Upsala) discussed the *physiology and morphology of the thymus gland*. He said the thymus was an epithelial organ infiltrated with lymphocytes. The histological structure suggested that the gland must be classed among the lymphoid organs, while by analogy it became evident that it belonged to the non-secretory glands. He dealt with the organ as possessing both characteristics, and adduced evidence in favour of this view.

Nusspaum (Bonn) read a paper on the *determination of sex*. It had been shown experimentally that external influences might determine the sex in a number of species of lower organizations, but these influences did not affect vertebrates and some of the plants. Objections could be raised against the recent theory of Noll and Correns and that of von Hertwig. He mentioned the single instance of double fertilization which had been observed by Doiters van Leenwen. The older statements with regard to the voluntary determination on the part of bees and butterflies must, he held, be rejected. Wilson, Morgan, Meve, and others had demonstrated that according to the varying influences to which the sperm cells might be exposed, the fertilized ovum would develop into male or female embryos. Turning to the question of butterflies, he stated that a marked differentiation, not only of the sexual glands but also of the body itself, was seen; that differentiation was characterized by differences in the number of chromosomes. In the frog the sexual glands and the body cells were not dependent on one another. He concluded that external influences played a determining part in algae, fungi, infusoria, and some of the lower crabs, and, in spite of the statements of Purmett and Whitney, also in rotatoria. He further dealt with the effect of variations of temperature, but felt inclined to ascribe the true cause of the formation of the male sex to reduced nutrition of a colony of parthenogenetic females.

Physiology.

ALFERTONI and TULLIO (Bologna) invited physiologists to agree upon a uniform method of studying the *alimentary changes in the various social classes.* In regard to this, they cited Atwater. They then proceeded to describe their method of studying the effect of the various diets on the Italian peasantry. They selected a certain number of families as types of the various classes, and allowed the individuals to follow their occupations and usual method of living during the experiments. They further always made allowance for somatic, moral, and economic factors. In determining the value of a single foodstuff, the individual was given his normal diet, with the special food added. In determining the chemical analysis of the foodstuffs, the chemical composition of the substances used in the preparation was always taken into account. They considered that the methods employed in the analyses and the mode of drawing conclusions should be uniform for all physiologists. A short discussion followed.

REINBOLD (Kolozsvár) referred to the *nature and physico-chemical properties of haemoglobin.* He regarded haemoglobin as a chemically uniform substance, and held that the blood pigment, derived from any source, always represented the same chemical body. He passed on to the consideration of the behaviour of haemoglobin toward gases, and objected to the complicated theory of Bohr, who attempted to explain the gas exchanges in different animals and under varying conditions by supposing that haemoglobin did not represent an unvariable substance. He believed that the laws governing the diffusion of the gases and the interchange on the part of the haemoglobin could best be determined by Hüfner's theory. The experiments dealing with the dissociation of oxyhaemoglobin were more easily explained on the basis of a uniformity of the chemical constitution of haemoglobin than by Bohr's theory. He was, therefore, hopeful that an acceptable solution of the question would be found in Hüfner's theory.

KÖRÖSY (Budapest) read an interesting paper, in which he discussed the question of the *building up of albumen in the animal body and of the breaking down of the albumen introduced as food.* He examined the condition in which proteids were absorbed after digestion—how this product was taken up into the blood, how albumen could be manufactured out of amino-acids and amides, and especially what chemical changes took place when various amino-acids acted upon one another. The relation between the excretion of nitrogen and the breaking down of albumen within the organism was also fully discussed. REINBOLD and LONDON (St. Petersburg) took part in the discussion.

ZWAARDEMAKER and DAKHUYZEN (Utrecht) said they had attempted to apply the doctrine of the *Phases* and the methods of thermo-dynamics to physiology. The organism endeavoured, during sleep especially, to maintain a physiological balance. The doctrine of phases was applicable only when the balance was nearly maintained. This doctrine was capable of throwing fresh light on the healing of wounds by first intention, and also on the participation of the intercellular substance in vital processes. Cartilage cells must contain all the chemical components of the basal substance, and if these were constantly being broken down, then the basal substance must eventually also disappear. The rapid automatic regeneration of the substance of the visual organs and of the perceptive cells in the ear was explained by the doctrine. The authors proceeded to illustrate the doctrine as applied to the differentiation and interrelationship between the yolk and white of the egg.

LONDON (St. Petersburg) spoke of the *constants in digestion and absorption.* His experiments with multiple fistulae in the living organism had shown that the various portions of the digestive tract performed regular and constant work; that the breaking down of albumen in the stomach took place with mathematical exactness; and, finally, that there was a definite relation between the quantity of food introduced, the quantity of digestive fluids produced, the time taken up in digestion, and the amount absorbed.

General and Experimental Pathology.

GARRÉ (Bonn) recorded the work done in the surgical clinics and laboratories in Bonn by Stich, Makkas, Dorman, and Capelle. His assistants had succeeded in transplanting pieces of arteries in the same animals, and also of the cat and human subject into dogs, and had found the vessels pervious after fifty-two days. Further, they had obtained satisfactory results, in spite of the difficult technique, with implantation of pieces of veins into arteries, in which cases no sac-like expansion had formed after four hundred and nine days, and the vessels had become sufficiently thickened to resist the internal pressure of the blood stream. These experiments offered a good prospect for the surgical treatment of ruptured vessels. With regard to the transplantation of organs, they had succeeded in reimplanting whole organs (thymus) into the same animal, but had hitherto failed to do the same into another animal of the same species. Carrel, who had introduced the method of the circular suture, had succeeded in transplanting kidneys into other animals of the same species, but in no other instance had an organ been transplanted into a second animal. Garré considered that the attempts to transplant whole extremities, etc., promised well for ultimate useful application.

ASCHOFF (Freiberg) read an excellent paper on the *morphology of the lipoid substances*, and this paper was amplified by FRÄNKEL (Vienna), who dealt with the *chemistry of the brain* and of the phosphatides of other organs. The former indicated the difficulties connected with the exact studies on this subject. He recognized among the lipoid substances: (*a*) The *phosphatides*—for example, sphingomyelin, lecithin; (*b*) the *cerebrosides*—for example, phrenosin; (*c*) the *cholesterins* and their compounds with fatty acids; (*d*) the *fatty acids* and neutral fats—glycerine esters and soaps; and (*e*) the *lipochromes.* He distinguished true from false lipochromes. The distinction was determined by the reaction with sulphuric acid and iodide of potassium. After dealing with potassium, sodium, and calcium soaps, he stated that free fatty acids could be demonstrated, especially in necrotic areas, in the form of crystals or as drops. Recent researches had shown that the so-called anisotropic drops found chiefly in kidneys undergoing fatty degeneration could be identified with pure cholesterine ester. The author did not consider that the production of these esters was a sign of degeneration, but rather inclined to the view that the substances were built up synthetically. The same applied to the production of the neutral fats, which when formed *intra vitam* were sometimes erroneously spoken of as "myelin." He also dwelt on the differentiation between the products of autolytic decomposition and dissociation of the higher forms of lipoids. Fränkel limited his remarks to the detection, origin, and mode of occurrence of the phosphatides and the chemistry of the myelin substance in the brain. An interesting but highly technical discussion followed.

BICKEL (Berlin) spoke of the *pathology of the secretory function of the digestive tract.* Disturbances of secretion, he said, were either parenchymatous or nervous. The diseases of the gland cells or of the sympathetic surrounding these glands produced parenchymatous disturbances. He distinguished between disturbances of the secretion of mucus and those of the secretion of the digestive juices. Over-secretion of mucus was essentially a symptom of parenchymatous disturbance. He believed that certain chemical substances circulating in the blood stimulated the parenchyma of the glands and gave rise to disturbances. In addition to this, accelerating or inhibitory stimuli arising from the extragastric and extra-intestinal nerves acted directly on the glands. He was further of opinion that motility and secretion were intimately connected, and that a parallelism existed between the secretory and motor functions of the digestive tract.

(To be continued.)

THE civil authorities of Rome have under consideration a scheme for the establishment of four great hospitals—one for children, one for women, one for sufferers from chronic ailments, and one for men who are the subjects of tuberculosis.

SIR WILLIAM BENNETT, K.C.V.O., President of the Incorporated Institute of Hygiene, will on September 30th formally open a permanent Exhibition of Hygiene which is being established at Carlton Buildings, Paradise Street, Birmingham, under the auspices of the Midland Counties Branch of the Institute.

INTERNATIONAL MEDICAL PRESS ASSOCIATION.

INAUGURAL MEETING.

THE Congress of the Medical Press opened its proceedings in the Hungarian Academy of Sciences, Budapest, on Friday, August 27th, at 10 a.m. A large and well appointed room was placed at its disposal, and the meeting was well attended. On the platform were Professor Lenhossék, President of the Hungarian Association of the Medical Press; Professor Müller, the President of the International Medical Congress; the Secretary of State, Victor von Molnár; the Under-Secretary, Ludwig Tóth; Dr. Blondel (Paris), Secretary of the International Association of the Medical Press; Dr. Dejace (Brussels), who took the chair since Professor Posner was unfortunately too ill to attend; and a few officials of the Hungarian Association.

Professor LENHOSSÉK, speaking in French, welcomed the Congress in the name of his national association, and then proceeded to sketch the history of the medical press in Hungary. The first medical journal was founded in 1831 under the name of *Orvosi tár*, while the second, *Orvosi hetilap*, appeared in 1857. At present there were thirty medical journals in Hungary, but some of these were of a popular type. He referred to the fact that these journals appeared in the Hungarian language and were primarily meant for the Hungarian reader. Nevertheless, he was pleased to think that the Hungarian Association could take an active part in the doings of the International Association, and declared that his colleagues approved of the ethical endeavours of the larger body.

VICTOR VON MOLNÁR greeted the Congress in the name of the Hungarian Ministry of Education. His speech was received with applause.

The next speaker was Professor MÜLLER, who stated that originally the journalist was merely the chronicler of his own time. His duties ended with the recital of what was taking place, and of what had taken place in the past. To-day the journalist had a far wider sphere of action. He had to deal with the past, the present, and the future. He had to indicate the march of science for days to come, and the true journalist should be a leader, well ahead of the men of his own time. In greeting the Congress of Journalists, he recognized that those present had not been satisfied with the performance of the duty of reporting the proceedings of the Congress, but had shown ample evidence of a desire to introduce reforms and smooth the way for the future.

Lastly, Dr. RAOUL BLONDEL (Paris) thanked the Hungarian members for the hearty welcome extended to their foreign colleagues. Before concluding he called on the members to adhere strictly to business, and not to prolong the debates unnecessarily. The medical press of the world must be unanimous in order that medical science could be successfully served.

History of the Association.

Before the actual business was entered upon, Dr. DEJACE spoke a few words from the chair, and then proceeded to read his report on the history and the objects of the International Association of the Medical Press. In well-chosen words, he sketched the history of the Association from its inception in Paris in 1897, through its first Congress in 1900 in Paris, through its conference held in Monaco in 1902, through its second and third Congresses in Madrid and Lisbon, and through its conferences in Brussels and London, up to the present meeting in Budapest. He briefly dealt with the general lines of thought which determined the action of the meetings at each place named, and spoke a few appreciative words about the members of the several executives. Next, he touched on the difficulties which the Association had met with and the manner in which these difficulties had been disposed of in the past. In conclusion, he stated that to-day the motto of the Association was "*Vivat, crescat, floreat*," while to-morrow it would employ the second term—*Crescat*—because it was the earnest desire of all concerned that its ramifications should extend throughout the whole East, to meet with the extension that had already spread in the West. In appreciation of this excellent account of the International Association and its doings, Dr. BLONDEL made a few complimentary remarks, referring briefly to the younger branches—Hungarian, Mexican, Brazilian, etc.

The Abuse of Articles by Medical Authors.

The next business was a report, presented by Mr. A. SMITH in the name of the British Association of the Medical Press, on the means for preventing the abuse of articles written by medical authors on medicinal products. He stated that, in considering the resolutions passed in London in 1907 by the International Conference, the British Medical Association had adopted at its Representative Meeting at Belfast this year a fourth resolution to the following effect:

> That it is the professional duty of medical authors of articles in medical journals to co-operate with the proprietors and editors of those journals in preventing any improper use of such articles for the purposes of advertisement.

The report explained the object of this resolution and the arguments which had been put forward in favour of its adoption. NEUSTÄTTER (formerly of Munich, Editor of the *Gesundeheitslehrer*) agreed in principle with the resolution, and quoted a new instance of abuse arising from the want of some stringent regulations. GRÜN (Vienna) wished to define the term "puffing article" (*article réclame*). He considered that an article could only be called a puff if the author had received payment for a favourable report, and if the report did not set forth the scientific results of a proper investigation. He moved, as an amendment, that a committee should be appointed, which should decide in each case whether a given article was a puff or a genuine therapeutic article. He was afraid that real therapeutics were being killed by this advanced action of the medical press. JAFFÉ (Hamburg) agreed with Grün in the main, but did not think that the committee proposed would serve a useful purpose. He would, therefore, support the original resolution. BLONDEL (Paris) defined the term *article réclame* as one in which the author dealt with therapeutic remedies and for which he had received payment. LUCAS-CHAMPIONNIÈRE (Paris) also dealt with the definition of puffing articles, and incidentally mentioned the position of journals published by manufacturing chemists. After this, each succeeding speaker completely got off the line, and dealt with definitions and everything save the resolution before the meeting. After a time, no resolution having been put to the meeting, the CHAIRMAN called on the representative of the British Association to present the second report.

Formation of a Permanent Bureau.

This second report dealt with the formation of a permanent bureau for international medical congresses and for congresses in the allied sciences. On the whole, the majority of the members present agreed with the report, provided that it was intended only to serve as a basis for the construction of a permanent bureau. LUCAS-CHAMPIONNIÈRE suggested, in consideration of the fact that the Commission was not likely to give the press as much as they would wish for, that the medical press should form a permanent bureau on its own account, but this idea was not considered practical. ARMIT, supported by JAFFÉ, proposed that the draft should be submitted to the Commission at its session on the following Wednesday, as a basis for discussion and for consideration. This was ultimately carried.

As has been reported, the scheme was considerably modified by the Commission. A careful examination of the report issued by the Commission reveals that the scheme adopted has been built up on that presented by the Commission itself, and modified by the British report. In any case, it still remains to be seen whether effect will be given to the main ideas underlying the British scheme, and whether the small working committee will be invested with those powers which the British Medical Press Association considered advisable.

Summaries of Papers in Different Languages.

The next report was one from BLONDEL on the advisability of requiring authors to publish summaries in one or more of three languages at the end of their articles. The resolution put before the meeting was as follows:

That all journals affiliated with the International Medical Press Association will adopt from January 1st, 1910, a regulation to the effect that each original article shall be followed by conclusions rendered in French, English, or German, provided that the article is not written in one of these languages. The authors themselves should be required to supply this summary, and if they are not capable of carrying out the translation this shall be undertaken by the editorial department of the journal.

An animated discussion followed, and a number of amendments were introduced. ARMIT (London) pointed out that the British Medical Press Association had issued instructions to the effect that this resolution could not be agreed to, the terms being considered impracticable. JAFFÉ moved that the words "will adopt" be altered in such a way as to convey the meaning that the rule would be adopted wherever it should be found to be practicable. The amendment was carried, and suitable words were inserted. Next the question of what languages should be admitted was discussed, and, after a protest against the proposed exclusion of Italian had been made by Ceccherelli, it was agreed that the summary should be published in one of the "official languages." The terms of the resolution having thus been altered, the British delegates withdrew their objection.

Reports of National Associations.

On Saturday morning the meeting was limited to the members of the International Association. Other journalists were admitted, but were not allowed to speak or vote. The business on the agenda was the reports of each national association. Canada was represented by LE CAVELIER, and a short report was given. GUENEDO for Mexico spoke next. JAFFÉ rose to speak in the name of Germany, but pointed out that no official representative had been elected and no official report had been prepared. Speaking unofficially, he gave an account of the doings of the German Association during the past year. He made especial reference to the "black list" and the work associated with its production. GRÜN, for Austria, also dealt with the action taken in regard to the control of advertisements. ARMIT reported that the British Medical Press Association had during the year carefully considered the question of the co-operative action of pharmacologists, clinicians, manufacturing chemists, and editors in respect to reports on medicinal preparations, but that in view of the complex nature of the question further deliberations had been considered necessary. He announced that a report would be drawn up at a later date, and when complete would be submitted to the International Association. DEJACE reported the work undertaken in Belgium; LUCAS-CHAMPIONNIÈRE spoke for France; LENHOSSÉK for Hungary; GRÜNFELD for Russia (unofficially, since no Russian Association may be formed according to the law at present). The speaker announced that there was some prospect that the law in Russia might be modified in the near future, so that a national association might be formed. ASCOLI spoke for Italy. BLONDEL reported that the publication of the reports, which had now been standing in type for three years, was delayed on account of the fact that the Italian report had not been received.

Election of Officers.

On Saturday afternoon, after the Committee had met and elected the officials and transacted other business, the Congress again resumed its deliberations. The announcement was then made that the following officers had been nominated, and in each case the election was confirmed:

President, Dr. Lucas-Championnière.
Vice-Presidents, Drs. Dejace and Lenhossék.
Secretary, Dr. Blondel.
Treasurer, Dr. Dawson Williams.

At the suggestion of NEUSTÄTTER, the meeting expressed the indebtedness of the association to Professor Posner for his valuable services as President, and elected him *Honorary President*. The announcement was further made that instead of electing the Committee for a period of three years it was considered wiser to elect it from each International Medical Congress to the next, in case the intervals should be altered. As matters now stand, the present Committee will hold office for four years, until the next Congress in London in 1913.

Next Meeting.

It was suggested that the next meeting should take place at Brussels, and DEJACE fell in with this view and expressed his pleasure at the suggestion.

Medical Authors and Editors.

The debate on the resolution of the British Medical Press Association on the co-operation between medical authors and editors was continued. NEUSTÄTTER felt inclined to defer the consideration for a year. SMITH pointed out that the matter before the meeting was a plain one which could be well dealt with at the present meeting. GRÜN delivered a strong speech directed against the consultant and professor classes of the profession, who, in his opinion, were more frequent and worse sinners with regard to advertising worthless remedies than the "little" practitioner. LUCAS-CHAMPIONNIÈRE agreed in the main with the British resolution. POZZI made a long speech and drifted off to the subject of criminal abortions, and had to be called to order. ARMIT pointed out, for the third or fourth time, that the British resolution was in effect an appeal to the practitioner as a man of honour to assist in upholding a high standard of ethics in the profession. Then a number of speeches followed, in which sympathy was expressed with the general tone of the resolution by KUTNER, BLONDEL, LUCAS-CHAMPIONNIÈRE, GRÜN, and others. Recognizing that there was but little chance of carrying the resolution in its original form, the British delegates agreed to withdraw it, after having heard the sympathy expressed with the action of the British section.

Proposed Black List.

NEUSTÄTTER next moved some resolutions dealing with the publication of a black list, with the definition of the term "*article réclame*," and with the question of commissions. These led to some lengthy debates, and were eventually passed in the form of "pious resolutions."

Uniform Medical Terminology.

Lastly, BLONDEL presented a report in the names of Posner and Schwalbe on the advisability of introducing a uniform medical terminology into the medical press. He objected to the names of observers and clinicians, etc., being employed to indicate diseases, etc., and suggested that the matter should be submitted to a committee.

Simultaneous Publication in Different Countries.

Dr. BLONDEL also brought up a second subject, which stood on the agenda in the names of Posner and Schwalbe, on the simultaneous publication of the same article by the author in two or more journals in different countries.

Close of the Meeting.

The meeting then terminated, and although but few resolutions had been carried, it was generally felt that the free exchange of views by medical journalists of different countries must serve a very useful purpose. The meeting, on the whole, was conducted in a more business-like spirit than is usual at international conferences of this nature. From a British point of view there was, perhaps, too much eloquence and not enough calm deliberation, too much expansion of thought and not enough dispatch of business. It is well, however, not to be hypercritical when good service may be rendered by friendly debate on matters of common interest, and it is advisable to make full allowance for small misunderstandings which arise from the minor differences existing in the ethics and mode of procedure of the various countries.

THE International Congress of Radiology and Electricity will be held at Brussels in 1910. The Congress is under the patronage of the Belgian Government and the French Society of Physics.

THE Sanitary Commissioner with the Government of India has proposed the formation of a permanent organization to inquire systematically into the problems, both practical and scientific, connected with malaria in India. The Governor-General in Council has decided to convene a conference to examine the whole question, and to draw up a plan for the consideration of the Government of India and the local Governments. The conference will assemble at Simla on October 11th, and is expected to last about a week. Each local Government is nominating to the conference an administrative officer of experience, a medical officer, and an Indian gentleman.

LITERARY NOTES.

Chambers's Journal for August contains an interesting account of "Tiger Dunlop," an Ontario pioneer. Dr. William Dunlop was a cadet of the ancient family of Dunlop of that ilk, long settled in the parish of the name in North Ayrshire. He was educated at Glasgow University, and, graduating at an early age as a Doctor of Medicine, determined to join the army service. He obtained a commission in the Connaught Rangers, and saw active service in the campaigns against the Americans (1813–15), during which he not infrequently laid down the lancet for the bayonet, and played a conspicuous part in three engagements. When peace had been arranged between Britain and the United States he went with his regiment to Calcutta, where he was stationed for some time. Shortly after his arrival there he contracted to exterminate the tigers which infested a certain island in the Ganges Delta, called Sangor, and as a memento of his achievements in killing an immense number of these animals he was, by universal consent of the natives, called "The Tiger"—a name which stuck to him for the rest of his adventurous life. While in India, Dunlop was seized with a severe attack of fever, which resulted in his returning home and being invalided on half-pay. To secure a living he first of all lectured on medical subjects, and then devoted himself to newspaper work. He was for a short time editor of a paper called *The British Press;* but his journalistic success was not great. Accordingly he was anxious to find fresh woods and pastures new. When the Canada Company was formed, under the guidance of John Galt the novelist, Dunlop joined him in the enterprise, and sailed in 1826. His American war experiences had made him familiar with the country; and on his arrival he was appointed Warden of the Woods and Forests. His energy and enthusiasm were unbounded, and a monument of his industry is the highway between Goderich and Toronto, which he cut through the thickest of bush and swamp. He took a prominent part in forming a settlement, the story of which is told in a book by Miss Elizabeth Lizars, entitled *In the Days of the Canada Company.* The first years of the settlement were the best; after the departure of John Galt the régime of the Canada Company gradually declined in popularity, and its policy was opposed at every point by a strong party. Through it all Tiger Dunlop still retained his place as a leader of public opinion in the district; and on the death in 1840 of his brother Robert, who had been the first member for Huron in the Legislature, he was elected to succeed him, and filled the office with credit. The loss of his brother was a severe blow to him, but he lived on with "Lou" at Gairbraid, and continued to be the central figure in this oasis of culture in the backwoods. He still corresponded with his relatives at home, and wrote at intervals several excellent articles to British magazines; they were mostly descriptive of the country and the life in Canada, and a series in *Fraser's* attracted considerable attention. He died worn out by work at Lachine, where he was superintending the construction of the canal in Eastern Ontario, in 1848. His will is worth quoting in full as a curiosity. It runs as follows:

In the name of God, Amen.

I, William Dunlop of Gairbraid, Western Canada, Esquire, being in sound health of body and mind, which my friends who do not flatter me say is no great shakes at the best of times, do make my last Will and Testament as follows, revoking of course all former Wills: I leave the property of Gairbraid and all other property I may be possessed of to my sisters Helen Boyle Story and Elizabeth Boyle Dunlop, the former because she is married to a minister, whom (may God help him!) she henpecks; the latter because she is married to nobody, nor is she likely to be, for she is an old maid and not marketrife. And also I leave to them and their heirs my share of the stock and implements upon the farm, providing always that the enclosure round my brother's grave be reserved; and if either of these should die without issue the other is to inherit the whole.

I leave to my sister-in-law Louisa Dunlop all my share of the household furniture and such traps, with the exceptions hereafter mentioned.

I leave my brother-in-law Allan my big silver snuff-box, as I am informed he is rather a decent Christian, with a swag belly and a jolly face.

I leave my silver tankard to the eldest son of old John as the representative of the family. I would have left it to old John himself, but he would have melted it down to make temperance medals, and that would have been a sacrilege. However, I have left him my big horn snuff-box; he can only make temperance horn spoons out of that.

I leave to my sister Jenny my Bible, the property formerly of my great-great-grandmother, Bethia Hamilton of Woodhall, and when she knows as much of the spirit as she does of the letter she will be another guise Christian than she is. I leave my late brother's watch to my brother Sandy, exhorting him at the same time to give up Whigging and Radicalism and all other sins that do most easily possess him. I leave my brother-in-law Allan my punch-bowl, as he is a big, "gausy" man, and likely to do credit to it. I leave to Parson Chirussie my big silver snuff-box I got from the Simcoe Militia, as a small token of my sister Maggie, whom no man of taste would have taken.

I leave to John Cadell a silver teapot, to the end that he may drink tea therefrom, to comfort him under the affliction of a slatternly wife. I leave my books to my brother Andrew, because he has been so long a "jungle wallah," that he may yet learn to read with them. I leave my silver cup, with the sovereign at the bottom of it, to my sister, Janet Graham Dunlop, because she is an old maid and pious, and therefore given to horning; and also my grandfather's snuff-box, as it looks decent to see an old maid taking snuff.

(Signed) WILLIAM DUNLOP.

"Tiger" Dunlop was one of the many members of the medical profession who have played a strenuous part in the building of the Empire.

THE WINTER SESSION IN THE MEDICAL SCHOOLS.

WE published last week information as to the dates of the opening of the winter session at the majority of the medical schools in London and the provinces, and as to the fashion in which the commencement of a new *annus medicus* will be marked at them. We now publish such information as has reached us from the remainder.

WEST LONDON POST-GRADUATE COLLEGE.—The opening of the winter session will be marked by a reception on Monday, October 11th, at 4.15 p.m., the principal event thereat being the delivery of an address by Professor Theodor Schott of Nauheim.

LONDON SCHOOL OF CLINICAL MEDICINE.—The winter session commences on October 1st without introductory ceremony. The annual dinner will again be held in the spring, instead of at the commencement of the winter session.

UNIVERSITY OF BIRMINGHAM.—Work for the winter session will commence in the Medical Faculty on Monday, October 4th, without any formal ceremony.

UNIVERSITY COLLEGE, CARDIFF.—Work for the winter session in the medical department of University College, Cardiff, will commence on Tuesday, October 5th. There will be no opening ceremony, but the head of each section of the medical school will make such introductory observation as seems to him desirable.

GUY'S HOSPITAL.—Term will commence without formal ceremony on October 1st, and a week later, October 7th, the opening meeting of the Pupils' Physical Society will be held in the Anatomical Theatre at 8 p.m. Dr. Frederick Taylor will be in the chair, and Sir Hector Cameron will deliver an address entitled A Plea for the Treatment of Abscess by Lister's Antiseptic Method. This meeting will be preceded by a dinner in the dining hall of the Students' Club at 6.25 p.m., the chair being taken by Mr. Cosmo Bonsor, the treasurer of the hospital.

Medical News.

THE new session at Livingstone College commences on September 29th. The entry of students is fairly satisfactory, including, once more, students of various nationalities and of many denominations.

THE total number of students registered in the faculties of medicine of the Universities of Italy during the academic year 1908–9 is returned as 4,387. These are distributed as follows: Naples 1,437, Rome, 454, Turin 381, Bologna 307, Pavia 290, Padua 220, Palermo 200, Genoa 172, Florence 155, Catania 151, Pisa 146, Modena 125, Parma 110, Messina 85, Cagliari 52, Siena 50, Sassari 42.

IT was announced last week that the official opening of the seventy-fifth winter session of the Medical School of the Middlesex Hospital would take place at the hospital on Friday, October 1st, at 3 p.m. After the introductory address by Dr. Strickland Goodall the prizes will be distributed by Lieutenant E. H. Shackleton, C.V.O. Admission to the opening ceremony will be by card only, and applications should be made to the Secretary-Superintendent, Mr. F. Clare Melhado, as early as possible, as the seating space will be rather limited.

British Medical Journal.

SATURDAY, SEPTEMBER 18TH, 1909.

THE HOUSING AND TOWN PLANNING BILL.

THE Housing Bill has at last passed through the House of Commons and gone to the Upper Chamber with a good prospect of becoming law. We heartily congratulate Mr. John Burns on his success. It has been a long struggle. More than twenty years ago the King, then Prince of Wales, as a member of a remarkably strong Commission on "The Housing of the Working Classes," signed a report recommending much that has just been passed in the present bill. The Acts for housing passed in 1890 and 1900 have come and failed, and the decent and healthy housing of the people, especially in rural districts, is still a scandal and just subject of complaint. The evolution of the present measure has been curiously slow. As far back as 1898 Sir Walter Foster introduced a bill asking for much that has now been sanctioned. When the Act of 1900 was passed these reforms were refused; but year after year his bill was reintroduced, and at length, soon after the present Parliament was elected, the chance came. In the first session the bill was entrusted to Mr. Mackarness through the fortunes of the ballot, and was read a second time and referred to a Select Committee. That Committee presented an admirable report in favour of the principles and provisions of the bill, and then in 1907 Mr. Burns introduced his measure. Little progress was made that year, but in 1908 the bill passed through the Committee stage, and under a pledge then given was introduced this year in the shape it had left the Standing Committee. Some portion of each of the four sessions of this Parliament has thus been given to frame this housing legislation, which is built on the lines laid down more than ten years ago. Such deliberate progress in a social reform already regarded as urgent in 1889 may do something towards reassuring timorous souls who are afraid of rapid revolutionary changes in this country.

Let us see how far this long incubation has produced a satisfactory result. Previous housing Acts had failed, especially in the rural and smaller urban districts, through the unwillingness of local authorities to take action, or the impediments of procedure. As a fact, less than a dozen district councils have been able to put housing schemes into operation in as many years. Under the bill all these local authorities will be obliged henceforth to include housing as one of their ordinary sanitary duties, and the Local Government Board will be armed with power to see that they do their duty, and can move on a complaint made by four householders of the area, if no complaint comes from a local council or a parish meeting. Again, the county council can on similar complaint act in default of action by a rural district council. As regards unfit houses, it is made the duty of the local authority to inspect and close such houses until made fit for habitation at the expense of the owner, and, if necessary, to do this work and charge it to the owner. In the last resort such houses can be demolished. The Local Government Board with its inspectors can step in to enforce these duties and require reports to be made on special areas either by the local authority or through its own inspectors. There was a strong feeling in favour of having a census made of all small houses in the district of every authority every five years, and, indeed, a clause to this effect was inserted in the Bill last year in the Standing Committee. Mr. Burns, who opposed it then, helped to reject the clause this year. This was, we think, a mistake in the interests of public health, but the error has been mitigated by amendments made on the report stage to Clauses 11 and 17, which greatly strengthen the powers to inspect and keep records of the results. There will in future be a Public Health and Housing Committee for every county council and a medical officer of health must be appointed for every county. He will have large powers, will not be appointed for a limited time, will give his whole time to his duties, and be removable only with the consent of the Local Government Board, who will have power to prescribe his duties. To this county medical officer it will be the duty of the clerk and medical officer of a district to supply, under a penalty, all information reasonably required. Facilities are given for public loans for housing purposes at a cheaper rate, and provisions are made to encourage the erection of cottages for rural districts by local councils and public utility societies, with the great boon of land up to one acre in extent attached to each dwelling. In this way the Allotments and Small Holdings Acts are wisely linked on to housing in country areas. All these powers and others for the beneficent end of getting healthier homes for the people, the Local Government Board will have the authority and duty to enforce. It is a huge task for an overburdened department. Considering all the extra work thrown by successive Acts on the Board during the last decade or two, it is an administrative miracle that there has been no breakdown. No higher praise can be given to the permanent staff. Unless the department is remodelled the breaking point must come. In the meanwhile we have no doubt the Board and its parliamentary chief will enter heartily and earnestly on this great work, which is likely to be difficult and sure to be costly. We must confess, however, that we have little love for these purely bureaucratic methods. Central control and supervision we accept as essential to wise sanitary administration, and to that uniformity of action which is most conducive to sanitary progress. Local initiative, nevertheless, is the surest and safest basis of such work. The sanitary staff of a district should always be the people to discover and disclose its sanitary needs. No inspector from the central body can ever do this so well as the experts on the spot, who know all the history, peculiarities, and special shortcomings of the locality. The bill in this respect is disappointing, and if it fails it will be due to the omission to secure a vigorous initiation in every district. This could have been done so easily. After all, housing is from top to bottom a health question, and the obvious road to success is through the local health officials.

At present the sanitary officers in the smaller areas dare not be very zealous. In many instances they know it is as much as their places are worth to condemn insanitary property. They are appointed for short periods, often from year to year, and a little extra zeal frequently results in non-election. To these officers should have been given the security which is limited by the bill to the county medical

officers, who do not need it, and whose duties seldom bring them into close contact with owners of small house property under the conditions that exist in district areas. In the smaller area private interests continually confront the sanitary officer in the execution of his work, and he, above all, should be secured from arbitrary dismissal for the conscientious discharge of his duty. Given this, there would at once be a local initiative in every district, which would do more than a hundred inspectors from the central authority to build up the structure of housing and sanitary reform on the soundest and strongest foundations. We profoundly regret that the President of the Local Government Board has resisted the appeals repeatedly made to him in favour of this simple concession. Is it too much to hope that the House of Lords will supply one more argument in favour of the Upper Chamber by amending the bill in this particular before it becomes law?

For Part II of the bill, which deals with town planning, and for the clauses dealing with improvement and reconstruction schemes, we have nothing but commendation. Slums which disgrace old centres of population will be impossible in new towns. Light, air, and space will brighten and purify the conditions of life and create models of sanitary excellence that the oldest and least progressive localities will be obliged to imitate. In this way the health and comfort of the poor and the amenities of the rich will alike be bettered by this bill, for it applies science to the art of government, and that is the prime wisdom.

MEDICAL EDUCATION.

THE last report of the Education Committee to the General Medical Council[1] gathers up the threads of the previous reports, and embodies them in the form of recommendations. We may remind our readers that the earlier reports had shown, *inter alia*, that the average age of students at entry was 18 years 6 months, and that the average time spent before a qualification was obtained was nearly seven years (to be exact, six years and eleven months); only 13.8 per cent. obtained their qualification in the minimum period of five years, while another 35.9 per cent. qualified during their sixth year; there remained, therefore, 51 per cent. who qualified in the seventh year or later.

From these and other statistics the conclusion is drawn that, although the entrance examination is only a junior standard, and cannot be viewed with complete satisfaction as the entrance standard to a learned profession, yet it would not at present be possible to raise it to a senior standard without largely reducing the supply of medical students. Another conclusion is that the length of time consumed in obtaining a qualification makes it undesirable to increase the five-year period. The Committee had been instructed to report on the question whether it was expedient to extend the course to six years, or, alternatively, to retain the five years, whilst setting back the subjects of chemistry, physics, and biology to a time anterior to the commencement of the medical curriculum proper. The first point has already been answered, and the Committee does not consider the alternative feasible at present, partly because the secondary schools of the country are not adequately equipped in sufficient numbers for the purposes of instruction, and partly because it would seem that the would-be medical student has, apparently, already all he can do to pass his entrance examination at a reasonable age.

So far, then, the Committee has dealt with the question of material alteration of the curriculum, with the result that it does not recommend any change; from this point onwards the report deals with the distribution of subjects within the four corners of the present curriculum.

The first suggestion to be discussed was whether the fifth year should be rigidly confined to clinical study. It is a matter of common knowledge that the General Medical Council, when adding a fifth year to the previous curriculum of four years, intended that it should be devoted to clinical work. It is equally well known that in practice it has come about that the extra year is not so spent, but is utilized for other studies as well. Nevertheless, the Committee does not advise that any cast-iron rule should be laid down, but appears to hope that by a better distribution of work throughout the earlier years the fifth year may become pretty free from other than clinical work.

The next suggestion made—and here the variations in the rules of licensing bodies and of medical schools bring about considerable divergencies of practice—was that the subjects of the curriculum should be divided into groups, as, in fact, they now are by their distribution between the first, intermediate, and final examinations, and that the study of any part of one group should not be commenced until the examination in all the subjects of the preceding group had been passed. As a matter of fact, overlapping of the study of subjects belonging to different groups prevails to a large extent, and to forbid it expressly would involve a material change, and in some contingencies serious hardship to individual students, without compensating advantage. The Committee therefore does not recommend the establishment of any regulation debarring the student from such overlapping as the rules of his school and the licensing body from which he intends to seek his qualification may allow. Nevertheless it does propose to set some limit on the degree of overlapping so far as the subjects of the final examination are concerned, and to reserve for them a certain period of undivided attention, so that they shall not be crowded out by earlier subjects. The suggestion is that a period of two years of undivided study of these subjects shall be required, and, further, that the final subjects shall occupy the "equivalent" of two and a half years' undivided study—any period of study in which subjects belonging to the intermediate examination are still being taken being reckoned as only half time. The Committee, in fact, recommends that if a student has passed the examinations in anatomy and physiology by the end of his first two and a half years he should be allowed to count the whole of the remaining two and a half years as study of the final subjects, and thus be in a position to go up for his examination at the end of his fifth year, whereas if he has not passed the whole of that examination at the end of his first two and a half years he should be delayed proportionately. If, for instance, he passed this examination at the end of his third year he could only count half his time, that is, three months of that year, towards the "equivalent" of two and a half years' study of final subjects, and would be delayed at least three months in going up for his final examination. The recommendations of the Committee have not yet been adopted by the Council, and it is probable

[1] SUPPLEMENT to the BRITISH MEDICAL JOURNAL, June 5th, 1909, p. 364.

that this recommendation may meet with some criticism alike on the part of the Council and of the licensing bodies, for the proposed recognition of half time would render the keeping of the student's record troublesome and complicated on account of the oddments of time to be calculated, and similar trouble would be imposed on the licensing bodies in checking the schedule before admission to examination. On behalf of the student himself it might be pleaded that in the case of some licensing bodies a delay of three months might mean a loss of six months more, owing to long intervals between examinations. The Committee has been actuated by a desire to secure adequate time for final subjects—and time is an element in studies of this kind to allow the knowledge to soak in—whilst at the same time penalizing the student in the form of delay as little as possible. On the other hand, something simpler might perhaps be devised without sacrificing the principle; and it may be suggested that if any such rule is adopted pharmacy might be excepted, for although it is included in the same examination with anatomy and physiology, at all events in some cases, its study is so closely allied with that of medicine that it would not lead the student's mind far away from his final subjects.

It is interesting to compare the suggestions made by Sir William Whitla in his Presidential Address at Belfast with those of this report. They are not in conflict at any point, inasmuch as the President confined himself to advocating changes which could be made without material departure from the existing recommendations of the Medical Council, so that his views and those of the Committee may be taken as complemental to one another. Both had the common object of securing more time for final studies; he sought to attain it by addressing himself to teachers and to teaching bodies, and by urging them to eliminate the non-essential and to shorten the teaching of preliminary subjects by directing them more closely to their ultimate objects; the Committee seeks to attain the same end by modification of regulations affecting the student directly. Both may be, and probably are, right, and we shall be interested to see what comments are made upon both proposals by the licensing bodies, for it must be remembered that the General Medical Council does not possess compulsory powers. It can only enforce its recommendations, if at all, by measures which are indirect and extreme, and must therefore trust, as a rule, to a sort of moral influence in order to secure their adoption.

THE GEOGRAPHICAL DISTRIBUTION OF DIABETES MELLITUS.

THE causation of diabetes remains so obscure that any careful study of the conditions under which it arises is worthy of attention, more especially if the scale be sufficiently large to get rid of the fallacies which attend limited inquiries. The geographical distribution of diabetes can be studied better and better each year as civilization spreads educated medical practitioners over all parts of the world and as death registration is adopted by the better organized states. In these ways much accurate statistical information is available that did not exist thirty years ago. Roberts, Saundby, Hirsch, and Clemow formerly published investigations into this subject, and it is interesting to compare their figures with those collected by Dr. R. T. Williamson.[1] The most striking fact is the rate at which the apparent mortality from diabetes has increased in all civilized countries. According to Sir William Roberts, in the decade 1851–60 the total number of deaths from diabetes in England was 4,546, giving an annual average of 454, while in the eight years 1861–68 the average was 628; in 1878 it was 1,057; in 1888, 1,773; in 1898, 2,585; and in 1907 it reached 3,360. The increase is quite out of proportion to that of the population, for it is about 700 per cent. where the growth of population is about 100 per cent.

Yet England compares by no means badly with other civilized countries. Few European countries have a registration system which affords statistics outside the great towns, but if we compare the figures of British cities with those of Continental cities the result is strikingly in favour of Great Britain. The diabetic mortality of London per 100,000 living is 8.3, of Manchester 6.6, Edinburgh 12.7, Glasgow 7.1, Aberdeen 5.7, Dublin 3 to 4, Christiania 12, Stockholm 12.5, Copenhagen 15.8, Amsterdam 11.8, Brussels 14.1, Paris 17.6, Bordeaux 25.8, Berlin 20, Munich 15, Dresden 11.3, Budapest 12, Rome 13, Madrid 10.5. A few years ago the editor of the *New York Medical Record* congratulated his compatriots on the comparative freedom of their country from diabetes, which he estimated to have caused a mortality per 100,000 living of only 2.1 in 1870 and 2.8 in 1880, and some years later the statistics of San Francisco gave the mortality for that city as 0.6. According to Dr. Williamson, the mortality for New York City is now 17.4, Washington 17.3, Boston 17.9, San Francisco 20, and even these high figures are exceeded by those of Worcester (Mass.) 27.3, Syracuse (N.Y.) 25.7, and Rochester (N.Y.) 21.6. The statistics from Canada are not so unfavourable as those of the United States, but they show that diabetes is at least as prevalent there as in England, the mortality in Toronto in 1905 being 15.4, and that for the province of Ontario 9.9. In the Australian Commonwealth the disease has become common, for in Victoria, including the city of Melbourne, and in South Australia there is a diabetic mortality of 11, while in New South Wales it is 5.8 and in Sydney 9.8. In New Zealand the rate is 9 per 100,000, but it presents this peculiarity, that the deaths are greater amongst females than amongst males, the average for the last six years being 36 males and 46 females, while in 1907 the female mortality from diabetes was double that of males.

Many observers have asserted the rarity of the disease among certain races, notably the Chinese and the African negroes, and these conclusions are in the main supported by the facts quoted by Dr. Williamson, although diabetes is met with now amongst urbanized Chinese in China and the Europeanized negroes and half-breeds of the United States; the number of cases among the latter is apparently small, for in Baltimore, where one out of five of the medical patients admitted to the hospital was coloured, of ten cases of diabetes only one was coloured. In contrast with this apparent racial exemption is the singular prevalence in certain countries, especially in Malta and Ceylon. In Professor Saundby's table for 1891, the rate per 100,000 of population in Malta was 13.1, but in Dr. Williamson's table the mortality in Malta has risen to 37.8! The evidence of the prevalence of the disease in Ceylon still depends upon the testimony of the local practitioners and is not supported by statistics, for Dr. Williamson's table

[1] *Medical Chronicle*, July, 1909.

shows the mortality to be only 3.4 per 100,000 inhabitants in 1907, while Professor Saundby, writing in 1892, quoted a letter from the Principal Medical Officer, the late Sir William Kinsey, who in his official dispatch to the Secretary of State said: "The Registrar-General's "figures if forwarded without explanation will convey "a very erroneous idea of the prevalence of diabetes "in Ceylon, because the registration of causes of death "is wholly unreliable, as no medical certificate is re-"quired and the natives of Ceylon are peculiarly "sensitive on the subject of diabetes; they consider it "disgraceful to have it, they never speak of it and "conceal its existence as long as they can, for it is "looked upon as a punishment for illgotten wealth, "and that it is necessarily fatal and unamenable to "treatment." One item of information which does not appear in the summaries by previous authors is taken by Dr. Williamson from a report by Dr. S. K. Hutton on the health and diseases of the Eskimos in Labrador; he practised there for five years, but during that time he did not meet with a single case of diabetes.

Dr. Williamson asks how far diabetes may depend upon certain conditions, such as the great mental strain of modern life, the increased consumption of sugar and sweet things, or of alcoholic and sweetened drinks, or whether the replacement of cane sugar by beet sugar has exercised any injurious influence. He is not able, however, to answer these questions. The progressive increase of diabetes in civilized countries implies that its occurrence is favoured by an abundant food supply, or by a supply in excess of the requirements of the body. Men who do very hard physical work are usually not fed too well, and those who, like the American lumbermen, get an abundant diet, work so hard that no harm comes from it, but in most civilized countries the people eat as much as they wish, while the work they perform is moderate in amount, so that the tendency is for the food supply to exceed the needs of the body and to produce conditions which favour the production of diabetes.

CLINICAL TEACHING.

IN our correspondence columns this week will be found a letter dealing with two subjects of distinct interest—the part which teachers should play in examinations, and the method of turning to the best advantage the vast resources of general hospitals in the way of clinical material. The writer seems to approve equally of the system of having a central board of examiners not in direct touch with those whom they examine, and of that of allowing all teachers to act as examiners; the method of which he disapproves is that of encouraging students to attend the practice of a few particular men because they are the examiners, and with the object of picking up any special views they may hold. With regard to clinical material, he suggests that a discussion as to the best way of using it for teaching purposes might be of practical use. He admits that formal clinical lectures have a certain value, especially in institutions where other systematic teaching is not conducted; but he holds that at the best they merely accentuate points already set forth at full length in ordinary textbooks and do not habituate the student to handling cases on his own account. In regard to this matter he makes certain suggestions, the interest of which is not invalidated by the fact that they read much like a description of the method long established, we believe, in most medical schools in London. Indeed, that fact in itself seems to prove that ventilation of the topic is desirable, since it shows that the method in question —that of obliging students to take an active part in the work both of in-patient and out-patient departments and of checking their observations on what may be called heuristic lines—is not generally known. Although this method, or something akin to it, would seem, in our correspondent's opinion, to be the optimum, it does not necessarily follow that no better one would be evolved from a general discussion on the subject. In any case, it is certain that neither in London nor anywhere else does clinical teaching give the results which might be expected from it, for it is common knowledge that those who habitually employ assistants in the conduct of their practices find newly qualified men curiously unversed in the knowledge which they require. It may very well be the case, therefore, that an expression of views on the subject, both subjectively by those whose duty it is to teach, and objectively by those who have recently passed through the medical schools, might prove of considerable value to future students. So far as concerns points such as the weighing of evidence, consideration of the personal equation in every given case, and the way in which the classical features of every disease vary in different patients, and thereby affect diagnosis, it has always seemed to us that the system in vogue at St. Bartholomew's Hospital is of singular value. At that institution it has been the custom for an unknown number of years to hold consultations in the theatre on doubtful cases from the surgical wards, and of late years it has become the rule of the hospital—on the suggestion, we believe, of its Senior Physician, Dr. Norman Moore—that medical cases which cannot be harmed by disturbance and in which some element of doubt exists, shall be brought into the theatre and examined by the assembled medical staff in the presence of the students. Each in turn makes his diagnosis, and outlines a treatment and supports his opinion by his reasons, the youngest physician present being the first to state his views. Such consultations form most valuable object lessons in diagnostic methods to all students who attend them.

PROFESSIONAL ADVERTISING.

SEVERAL correspondents have been good enough to draw our attention to an ingenious attempt which is now being made to raise funds by the proprietors of a recent addition to the many guide books to London. This volume, named *To and Fro*, was sent to us for review some months ago, and we noted that one of its features was a chapter called the "Location Directory." This purported to be a guide to the principal houses of business, restaurants, places of amusements, and the like, and included two short lists of physicians and surgeons respectively. On examining this chapter, it was clear that the places mentioned were not invariably those to which a person who did not know his London would be most likely to desire to find his way, while the physicians and surgeons mentioned seemed to be for the most part persons unlikely to be known to any except those in their immediate neighbourhood and their personal friends and patients. The impression gathered, therefore, was that the compilers had probably picked out, more or less haphazard, a few names of places and persons by way of starting these subsections, and sooner or later would make the insertion of names in this chapter a source of income. This impression is now confirmed, for we have before us a letter in which the proprietors state their intention of enlarging the subsection relating to medical men into a "professional

directory," and naïvely point out that they cannot publish the work at its present "popular price of 6d. "without some small charge being made for location "numbers." The small charge in question is one guinea a year, and the person to whom the letter is addressed, a medical man, is invited to fill in a form and enclose that sum. We doubt if many medical men are ready to part with their hard-earned guineas quite so readily, and are quite sure, at any rate, that very few will be disposed to spend their money in such a fashion. The insertion of names of individuals is quite foreign to the ostensible object of the booklet, for this is to save its user's time by showing him what public conveyance to take in order to get from any one spot to any other in London. Any one, therefore, possessed of the name of the medical man whom he wished to consult and of the street in which he resided, could find his way to the house forthwith so far as this guide book is of any real service at all. As for that, when reviewing the book we expressed the opinion that it was not likely to prove a serious rival to the local policeman as a guide and counsellor to the wayfarer, but that it was worthy of consideration by those who found a *Continental Bradshaw* an attractive intellectual study. We may add now that since it would seem that the continued appearance in the book of the name of any medical man must usually be a matter of payment, any member of the profession who is so unfortunate as to have his name included therein is exposed to the risk of having to answer a charge of advertising before the General Medical Council.

WORKMEN'S COMPENSATION IN FRANCE.

DR. MARCEL BRAUNBERGER, in *La Tribune Médicale*, August 14th, 1909, gives an account of some of the difficulties and disagreeable incidents in the practical application of law as to workmen's compensation in France. After observing that while some think the measure one of the greatest social reforms accomplished in the Third Republic, others hold a different view, he expresses the belief that all will agree that the machinery of the law is faulty, and that its working is causing profound discontent. The injured workmen feel themselves rent between fear of the displeasure of employers and a desire to be treated by the medical men in whom they have confidence. The employers complain of the growing increase of premiums, and the underwriters contend that the medical control is quite insufficient, and pointing to certain abuses by less scrupulous medical men, seem inclined to form an unfavourable opinion of all doctors not directly employed by them. The members of the medical profession complain of loss of dignity, and feel themselves humiliated by the frequent discussions, haggling, and requests for reduction of their moderate charges for services rendered. A further annoyance is that this matter of fee is left sometimes to be dealt with by a beardless office-boy, who, in the name of the insurance office, argues questions as to the frequency of the dressings, the need for operation, and the indications for local or general anaesthesia. The result of all this is that medical men often accept insufficient fees rather than risk a repetition of such snubbing or the inconvenience and unpleasantness of seeking a remedy in court. While complaints as to increasing premiums and accusations of malingering or reluctance on the part of injured workmen to return promptly to work are frequently heard in this country, we can congratulate ourselves on the fact that we are saved from unseemly squabbles about fees. This difficulty appears to arise largely from the clause in the French law which allows the workman to choose his own doctor, and requires the employer to pay for medical attendance and medicines according to a fixed tariff. The remedy proposed by Dr. Braunberger for this state of affairs is that an agreement should be entered into between employers and medical men who undertake the treatment of injured workmen, providing that the doctor shall give immediate notice that he is in attendance on an injured employee, and the employer is then to put his own medical man in communication with the medical attendant; a consultation would then, if necessary, be held as to the diagnosis and treatment. The medical attendant would submit to the medical officer of the employer every ten days a statement of the operations, dressings, and other treatment carried out during the period. If the employer's doctor countersigns this statement, it would be accepted by the employer and the fees be paid on the tariff scale without dispute. In the event of a disagreement the parties would bind themselves to have the matter settled forthwith by an arbitrator, a medical man of standing. Such an arrangement would no doubt be of great service to both medical men and employers, and would hardly appear to be capable of doing a disservice to the workman, yet it is possible that the latter may hesitate to accept it. We have in mind a clause in our own Workmen's Compensation Act under which in certain circumstances, if both parties agree, a medical referee may be called in to give a conclusive certificate as to the workman's condition or fitness for employment. Very little use appears so far to have been made of the provision.

OSBORNE.

THE report of Lieutenant-Colonel C. R. Kilkelly, M.B., House Governor and Medical Superintendent of Osborne, shows that the accommodation provided for 43 officers and 5 ladies has seldom, since this convalescent hospital was opened in April, 1906, been fully utilized. The average number of patients under treatment during the three years has generally been between 30 and 35. During the year ending March 31st, 1909, 239 officers were admitted; the majority belonged to the home army, and nearly 63.17 per cent. of the total number of admissions were for diseases contracted in India. The number of admissions from the Royal Navy was 27, equal to 11.3 per cent. of the total admissions—a ratio which nearly corresponds to the relative strengths of the navy and army in officers; 3 officers belonging to the West African and Nigerian forces, 2 to the West Indian regiments, and 56 to the Indian army were admitted during the year. The largest numbers of admissions were for infective diseases, principally dysentery (40), and for diseases of the digestive system, chiefly colitis and inflammation of the intestines, and liver abscesses (78). Diseases of the nervous system accounted for 40 admissions, including 22 cases of neurasthenia. The origin of most of the 158 cases thus accounted for was directly attributable to service in tropical climates. There were no admissions for Malta fever, but 2 for kala-azar, contracted in Kordofan and in Burmah respectively; in the latter case the patient recovered after a series of relapses and continuous treatment extending over a period of eleven months. About 80 per cent. of the cases of dysentery recovered and have returned to duty. Marked success has attended the treatment of various diseases with serum and vaccines, and the use of sour milk has proved most beneficial in the treatment of digestive diseases. Weir Mitchell courses were carried out in many neurasthenic cases, and treatment by massage, electricity, and baths of various kinds was employed in 115 cases. Colonel Kilkelly reports that a member of the consulting staff visited Osborne every month

for the purpose of consultations and to inspect the medical nursing, domestic, and general arrangements. Two special visits (without fees) were also made by Dr. Ferrier and Mr. L. V. Cargill (ophthalmic surgeon) for consultation on a serious case of illness. In addition to consultations at Osborne, officers have frequently had the benefit of further advice and treatment gratuitously from members of the consulting staff at their residences in London, for which they have been most grateful. Numerous analyses and investigations of diseases, which were of great value in their treatment, were made in the laboratories of the Royal Army Medical College under Professor Leishman. A somewhat similar institution, the *Offizierheim im Taunus*, for officers of the German army, navy, and colonial forces, was opened in the presence of the Emperor and Empress on August 20th. It provides accommodation for fifty-two officers, and there are facilities for hydrotherapeutic and medico-mechanical treatment, and for exercise, air, and sun cures. The institution is under the direction of Dr. Krebs. The charges made vary from 3 marks a day to lieutenants, to 6 marks a day to generals; relatives staying with officers are charged 6 marks a day.

VEIN ANAESTHESIA.

AT the Congress of the German Surgical Society held in 1908 Professor A. Bier described a new method of inducing local anaesthesia, which has been briefly mentioned in the JOURNAL.[1] He has now carried this method out on 134 occasions, and has recorded his experience.[2] He was led to introduce the method because local anaesthetics do not penetrate the sheath of the larger nerves readily, and he thought that the vascular system would afford a ready means of reaching the nerve substance. When a limb is rendered bloodless and a constricting bandage is left both above and below the part enveloped by the first bandage, complete anaesthesia follows the introduction of a local anaesthetic into one of the empty veins. Experiments have demonstrated that the fluid oozes out of the vein into the tissues, and pervades muscles, subcutaneous tissue, nerves, and bone. To this method Bier applies the term "vein anaesthesia" as convenient if not quite correct. The syringe must be made of metal, and pressure rubber tubing must be used to connect the cannula to the syringe. He thinks the best anaesthetic is novocain in 0.5 per cent. solution in physiological salt solution. The limb is first rendered thoroughly bloodless by applying Esmarch's bandage tightly from the peripheral end to a point just above where the anaesthesia is required. If an infective process be present, the limb should be constricted above the affected area by several turns of an elastic bandage, and the Esmarch's bandage is taken from this level to a point as conveniently high in the limb as possible. Above the constricting bandage several turns of another elastic bandage are applied tightly enough to keep the limb bloodless when the long bandage is taken off. The novocain is injected into a vein in the bloodless part between the two bandages. The vein should be exposed under Schleich's infiltration anaesthesia before the constriction is applied. In the arm, either the basilic, the cephalic, or the median vein may be selected. In the leg, the great saphena vein is the best. The vein is penetrated close to the upper bandage. The solution should be injected toward the periphery. As a rule, 80 c.cm. of the solution suffices, although 100 c.cm. or more may be given with safety. Considerable force may be required to inject this quantity into the vein, and it is always necessary to tie the cannula into the vein firmly. The anaesthesia sets in within a few minutes at latest, and is limited to the area between the two bandages. This Bier calls the direct anaesthesia. After fifteen to twenty minutes the part below the lower bandage is rendered anaesthetic, which he calls indirect anaesthesia. First the deep sensibility is lost, then the superficial, and then the motor power. He does not operate under indirect anaesthesia until marked paralysis of the limb is present. One disadvantage of the method is that the anaesthesia rapidly disappears when the constricting bandage is loosened. The lower bandage can be taken off without affecting the field, but the upper one can be removed only when the operation is over. The ligature of vessels and suture of the skin has, therefore, to be accomplished quickly and under certain difficulties. After the operation, before the upper bandage is loosened, he washes out the vein thoroughly with physiological saline solution to remove the excess of the anaesthetic, and he has not observed any serious toxic effects.

[1] EPITOME, August 22nd, 1908, p. 30.
[2] *Berl. klin. Woch.*, vol. i, 1909.

PLACENTA PRAEVIA IN PRIVATE PRACTICE.

PROFESSOR FRITSCH stated recently that the clinical teaching of midwifery has necessarily become divorced from midwifery of general practice, and contended that the general practitioner is not capable of keeping up with the modern requirements of science owing to want of constant operative practice, want of the necessary instruments and apparatus, and to the absence of adequate care and nursing in private. This pessimistic doctrine has been vigorously combated by Bokelmann, who, taking as an illustration the treatment of placenta praevia, contends that as good results are obtained by general practitioners as by specialist professors. He states that Krönig and Sellheim have gone so far as to assert that it is necessary to admit every case of placenta praevia into hospital, and to deliver by means of vaginal Caesarean section, while they do not hesitate to recommend supravaginal amputation of the uterus if haemorrhage occur later. In reply to these assertions Bokelmann relates how, in a long experience, he has had to deal with some 16 cases of placenta praevia in private practice, but that, if the cases he treated as obstetric house-physician be added, the number is raised to 50. Several of these cases were severe, and were treated in earlier days by combined version, but more recently by the dilator. He had no death from haemorrhage—in fact, all the mothers recovered. What claim, he asks, have the specialists to introduce a modern form of treatment, which involves a considerable risk to the mother's life even when performed by the most skilled operator, when a general practitioner can obtain results such as these? He admits that the number of his cases is small; nevertheless he claims that they suffice to show that placenta praevia, when properly treated, is not a complication the treatment of which the general practitioner need fear to undertake. He states that he lost more infants when he turned than since he has employed the dilator, but he has never met with a single case of haemorrhage after delivery. More than this, he states that in his whole experience he has only plugged a uterus once, and then not for placenta praevia. Provided that the cervix and uterus are not torn, he maintains that haemorrhage after delivery need not occur. He asks general practitioners to publish the results of their cases of placenta praevia, in order to demonstrate that the results in private practice are better than those obtained in modern clinics, where heroic procedures are employed for

conditions which may terminate spontaneously. In his opinion, before the professors advocate wholesale operations, they should show that the results obtainable with care and skill by the older methods are such as to warrant these drastic measures.

ERNST VON BERGMANN.

IN 1907 we noticed the volume[1] issued by the Prussian Army Medical Department in honour of the 70th birthday of Ernst von Bergmann. Three months after the occasion thus justly honoured the great surgeon and teacher died. His loss was felt far beyond the confines of his Fatherland; his country, indeed, was the whole world of surgery. In his memory a portrait medal was struck, and dedicated to "a great surgeon "and teacher, indefatigable in the furtherance of "medical knowledge and technique, tireless in the "service of mankind." But a more intimate and appropriate commemoration has been furnished by his pupils and colleagues in the publication of a lecture cycle[2] covering the development and progress of surgery during the last ten years. The contributors number amongst them some of the most eminent surgeons of Germany, and the lecturers have given of their best to this labour of love. Professor Bier deals with inflammation, Professor Schleich with the development of general and local anaesthesia, Bardenheuer with fractures, Rehn with the surgery of the chest, Sonnenburg with plastic surgery, and so on to the number of fourteen articles. In his introductory address, Professor Kutner makes a graceful attempt to place von Bergmann in his niche of fame with Paré, Simpson, Esmarch, von Kern, Dupuytren, Dieffenbach, John Hunter, and many another. Speaking of von Bergmann's labours in the field of topographical anatomy, he reminded his audience of the famous answer to some one who asked him in his later years why he did not spare himself at least the strain of routine teaching on the dead body—"To the surgeon, "the day in which he does not work at anatomy is "a day lost." To those who knew anything of his tireless energy and indomitable perseverance, it will not come as a surprise that his maxim through life was *Nur nicht müde werden*. It is but a poor rendering of the phrase to translate it "Never say die," but there is in it at least that negation of despondency for which von Bergmann stood in the face of every difficulty and every problem.

COLOUR-BLIND ENGINE-DRIVERS IN FRANCE.

WE have repeatedly during the past few years drawn attention to the fact that the methods employed by our English railway companies and by the Board of Trade to detect congenital and acquired colour blindness among railway employees and seamen are hopelessly inadequate, and barely serve to detect the grosser forms of the disease. This is more especially true in some forms of acquired colour blindness, and in those cases where the red end of the spectrum is shortened. An engine-driver suffering from alcoholic or tobacco amblyopia, or from retrobulbar neuritis of nasal origin can match and name Holmgren's wools, as used by the railway examiner, without any difficulty whatever. The same man, when he is confronted with a dim red light, perfectly visible to the normal sighted, may not only compare it with green, calling it a "reddish-green" or a "greenish-red," but he may see no light at all. The same is true of many congenital Daltonians; they pass the colour test, but fail inevitably when intelligently examined with the lamp. These facts have been successively pointed out by Buxton, by Grossmann, by Edridge-Green, by Devereux Marshall, and by many others in England; and in Germany, Nagel, who is himself colour blind, has shown the absolute futility of all the ordinary methods of detecting the defect. The subject is one of vast importance. Sinclair has collected six accidents caused by colour-blind drivers. Bickerton reports several accidents at sea, while only a few years ago an ophthalmic surgeon stated in the *Ophthalmoscope* that he had been consulted by the commander of a cruiser which put into Aberdeen, and found him to be colour blind. Probably the high officials of our great railway companies and of the Board of Trade do not realize how very frequent colour blindness is. Prévost believed that in every twenty individuals collected by chance at least one would be colour blind. Redard found the figure to be 2 per cent., Schmitz 7 per cent. Worms, chief medical officer to the Northern Railway of France, discovered that among 11,497 employees 224 had imperfect colour perception. This gives a percentage of nearly 2 among men who had presumedly already been accepted as normal sighted. There is strong reason, indeed, to believe that at least 2 per cent. of all individuals have more or less defective colour vision. These important facts have been brought before the public again and again, but so far nothing has been done to protect travellers. In France J. Clerc has again reopened the whole question in an exhaustive article in the *Revue générale d'ophtalmologie* for November and December, 1908. French signals both by day and night are more complicated than with us. Here all main signals are either red or green, although on some lines—as, for example, the North-Western—a violet light is used for ground signals and certain platform and shunting signals. In France violet is more extensively used both for lamps and as a colour for semaphores. The white light has not yet been eliminated. Red means stop, green proceed cautiously, white all clear. The author carefully explains all the signals in his paper. Having done so he discusses colour vision generally, going carefully into the relative distances at which white, red, violet, blue, and green lights can be distinguished. He thinks that the signalling system is a good one, and easily interpreted by the normal sighted. He states that nine-tenths of all railway accidents are caused by errors in interpreting coloured signals. The cause is that the colour examinations of the employees are not intelligently performed and are far too infrequent. The subject of acquired colour blindness is carefully treated. It is present in optic atrophy, in albuminuric retinitis, in diabetes—a disease to which engine-drivers are especially liable—in specific retinal, choroidal and nerve disease, and in many general diseases, and after head injuries. But most important of all is the central scotoma for red and green which characterizes alcoholic and tobacco amblyopia. An engine-driver with this disease will match and name all the wools easily, but when shown a small piece of green wool separately he fails to perceive its colour; similarly he fails to see the minute disc of a red lamp at 400 yards' distance. Clerc absolutely rejects Holmgren's wools and all similar methods. He advocates Sauvineau's lamp. He discusses all the good and the bad methods, and finally concludes as follows: The vision of every candidate must be examined methodically. The examination must be repeated every three years, and after illness and accident. It must be made in part with coloured lamps, and by an ophthalmic specialist.

[1] BRITISH MEDICAL JOURNAL, 1907, vol. i, p. 1242.

[2] *Entwicklung und Fortschritte der Chirurgie. Vortragszyklus veranstaltet zur Erinnerung an Ernst von Bergmann.* Edited by Professor Dr. R. Kutner. Jena: Gustav Fischer. 1909. (Roy. 8vo, pp. 488, illustrations 43. M. 7.)

POISONOUS HAIR WASHES.

Some hair dyes contain aniline derivatives, some of which have no toxic action, but others are very poisonous, paraphenylendiamine being especially dangerous. A. Gautier has written an exhaustive work on the chemical constituents of hair dyes, and he points out that a single application of paraphenylendiamine has sufficed to induce a toxic action. The symptoms of intoxication with this and other poisonous aniline dyes may be divided into three groups. (1) Toxic skin eruptions, eczema, and urticaria, with great burning and itching. (2) Gastro-intestinal symptoms, such as nausea. (3) Nervous symptoms, sleeplessness, dizziness, weakness of the legs, epileptiform attacks, and syncope. In several instances death has resulted. Cases have been reported in which hair washes have caused retrobulbar neuritis, with impairment of central vision, and a central scotoma for red and green. Berger (*Archives of Ophthalmology*, July, 1909) adds a fresh case to a list already sufficiently long. It would be to the public interest were the sale and use of hair washes containing dangerous toxic reagents and dyes prohibited.

Dr. Frederic W. Hewitt, M.V.O., will read a paper on "The need for legislation in regard to anaesthetics and the lines upon which it should take place" before the Medical Society of London on Monday, October 25th.

The next session of the London School of Tropical Medicine will open on Tuesday, October 26th, when an address will be delivered by Dr. Osler, Regius Professor of Medicine in the University of Oxford. The American Ambassador will preside. The same evening Dr. A. G. Bagshawe, Director of the Sleeping Sickness Bureau, who is an old pupil of the school, will take the chair at the school dinner, which will be held at the Savoy Hotel.

Medical Notes in Parliament.

[From our Lobby Correspondent.]

The Housing Bill.—On Friday last the Housing Bill came on for its final stages in the House of Commons, and occupied the whole sitting. The discussion was, however, of little interest from a public health point of view, as none of the new medical clauses and amendments were even moved. The effort to restore the census clause failed, as the motion was ruled out of order as likely to increase expenditure, a course not permissible on the report stage; and the new clause to give security of tenure to medical officers of health was also out of order. An amendment to Clause 69 to make all sanitary officers removable only with the consent of the Local Government Board, put down by Mr. Barnard and Sir Walter Foster, was not reached. There was an interesting discussion raised by Lord Robert Cecil on a proposal to give the Local Government Board power to revoke unreasonable by-laws, and so strong a case was made out that Mr. Burns promised to deal with it, if possible, before the bill became law. An attempt was afterwards made to omit Clause 1, which was retained by 120 votes to 27. The rest of the afternoon till the closure fell at 5 o'clock was mainly occupied by discussing the methods of acquiring land under the bill. Mr. Burns then made several drafting amendments, and also strengthened the clauses dealing with the inspection of houses. The Bill was then read a third time without a division. Afterwards it was presented and read a first time in the House of Lords. On Tuesday the second reading was taken in the Upper Chamber after a somewhat lengthy debate. After Lord Beauchamp had explained the provisions of the Bill, Lord Onslow criticized the measure at considerable length, and mainly based his objections on the bureaucratic powers given to the Local Government Board. The Bishop of Birmingham, who followed, defended the powers given to the central authority, but greatly deplored the omission of the census (Clause 30), which would have been most valuable in publishing the names of the owners of bad property. Lord Belper objected to the powers given to the Local Government Board as a distinct blow to local government, and he took the strongest possible exception also to the power given in Clause 68 (2) to the Local Government Board to prescribe the duties of the county councils' medical officers, and to withhold consent to their removal. The county councils paid the medical officers, and the Board had no right to interfere. The Archbishop of Canterbury joined in the general welcome of the Bill, which had been given even by its critics, but had some misgivings as to Clause 30, especially if it had been omitted to avoid publishing the names of the owners of the worst property. As regards health officers, everybody would desire to see the medical officer giving his whole time to his work and not removable by the local folk whose action he might often feel it his duty to call in question. He had known cases in which a man in outspoken honesty had declared he would long ago have protested against some of the dwellings that came under his notice but for the conditions of his tenure of office. The bill would effect a great change—on the whole, a beneficent change—and be fruitful in result in years to come. After speeches from Lord Zouche and the Duke of Northumberland, Lord St. Aldwyn criticized the bill at considerable length as regards its general principles, and then Lord Crewe concluded the debate in a strong defence of the bill. He believed it was the starting point of a new order of things. He was in agreement with the most reverend Primate when he said that this was the most important social question remaining. He had always felt that our educational system could never be genuinely successful if the children were living in houses little better than pigsties. It was also impossible to deal to the full extent with the problem of excessive drinking so long as people lived in intolerable homes. There was nothing more depressing than the sight of the slums in large towns, and he hoped, therefore, that the effect of the bill would not only be positive, but would also be educative in the sense that it would bring home some of our national deficiences both to local authorities and to individuals. The bill was read a second time.

The Metropolitan Ambulances Bill.—This Bill was read a second time in the Lords on Tuesday, on the motion of Lord Beauchamp, who said the measure was founded largely on the report of a Home Office Committee. There had been a correspondence in the *Times* on the question whether the London County Council or the Metropolitan Asylums Board was the proper authority to deal with this matter. The view of the Home Office was that it would not be possible for the Metropolitan Asylums Board to undertake the duty now, and, as that body was charged with the removal of cases of infectious disease, it was desirable to remove from the minds of the public any suspicion arising from that circumstance. The County Council would be able to utilize certain land and some stations for the purposes of the Bill, and altogether the Home Office considered that they were the proper authority to undertake the work. Lord Donoughmore explained the position of the London County Council as regards the bill. He was instructed that the Home Office Committee recommended that the Metropolitan Asylums Board should be the ambulance authority for London, and there was a minority memorandum by Sir William Collins, the author of this bill, advocating practically the system outlined in the bill. The County Council considered that it would be more economical if the Asylums Board were the authority, but they would be sorry to see any delay in dealing with the matter,

which was of some urgency. An amendment would therefore, be moved in Committee to enable the Council to enter into an arrangement with the Asylums Board with the object of utilizing and preserving existing facilities, subject to the consent of the Local Government Board. After some remarks by Lords Onslow, Monk Bretton, and Camperdown, the second reading was agreed to.

Revaccination in the Navy.—On Tuesday Mr. Lupton asked the First Lord of the Admiralty if he would abandon the practice of making revaccination compulsory for candidates for employment in the dockyards, having regard to the statement by the Royal Commissioners on Vaccination, in their final report, paragraph 419, that the occurrence of a febrile illness was the desired result of vaccination, and that it was sometimes attended by eruption. Mr. McKenna said that he was considering the conditions under which vaccination on entry in the dockyards was made compulsory, but, in view of the difficulties of consultation during the period of the year ordinarily devoted to holidays, he was unable to promise any early conclusions. In answer to further questions, the First Lord said that he was not considering the abolition of vaccination; but he had been considering the conditions under which vaccination on entering the dockyards is made compulsory, and he believed that in certain Government departments the question had been brought up for special consideration.

The Vaccination of Infants.—Mr. Pointer asked the President of the Local Government Board, on Tuesday, whether he had sanctioned the practice which obtained in most of the lying-in wards of workhouses of vaccinating infants within a few days of birth, to secure their vaccination before the mothers left the wards; and whether, in view of the risk to such young lives, he would issue a circular to boards of guardians recommending the exhibition of notices informing mothers that they were not compelled to have their infants vaccinated before they were 6 months old, and that, if the parents wished to secure exemption from vaccination altogether, they might do so in the manner provided on the paper issued by the registrar when the birth of the child was registered. Mr. Burns said that he was not aware that the practice referred to obtained in most workhouses. It had not been sanctioned by him. Information was given to the parent with respect to the matters mentioned in the latter part of the question by means of the paper issued by the registrar when the birth of the child was registered. He doubted whether anything further was necessary.

Frozen Meat for the Army.—Mr. Hunt asked the Secretary of State for War whether, in view of the fact that soldiers were supplied with frozen meat twice a week, and of the fact that it was generally recognized by experts in the meat trade that one pound of freshly-killed meat had more nourishment in it than several pounds of frozen meat, he could see his way to having the soldiers supplied in future entirely with freshly-killed meat. Mr. Haldane said it was not admitted that frozen meat was less nourishing than freshly-killed meat. From experiments that had been made it had been proved that pound for pound frozen and chilled meat was practically equal to fresh-killed meat. Under these circumstances it was not proposed to make any alteration in the present meat supply for the army.

Coal Smoke in West Ham.—Mr. H. J. Wilson called the attention of the President of the Local Government Board to the fact that 3,222 complaints had been made by the Smoke Abatement Society to the West Ham Corporation as to the smoke nuisance, without avail, and asked whether this failure to enforce the provisions of the Public Health Act, 1875, had been brought to his notice, and what action he proposed to take. Mr. Burns replied that he was aware that the society had made numerous complaints to the town council on this subject. The latter had, he understood, served a number of notices calling for abatement of the nuisance, but he did not gather that they had proceeded for penalties before the justices. The Local Government Board had from time to time brought this matter under the notice of the town council. The Board were not empowered to take upon themselves the powers and duties of a local authority who had made default in relation to nuisances under the Public Health Act, 1875, but they could authorize an officer of police acting in the district to institute proceedings if the default of the authority was proved to their satisfaction. Any officer so appointed, however, would have no greater power to take action than was conferred by the Act on any person aggrieved by the nuisance, or any inhabitant of the district, or any owner of premises within it.

Dr. Lalcaca.—In answer to Mr. Simon, the Under-Secretary for India stated last week that he had already expressed to the House on behalf of the Government their deep appreciation of Dr. Lalcaca's heroic action, and explained that the circumstances of the case were such that appreciation could not appropriately be marked by a money grant to his surviving relatives. He could now add that the Government of Bombay had been authorized to contribute from public funds a sum of £100 to a memorial for which subscriptions were being collected in Bombay.

Patent Medicines (Revenue).—Captain Craig asked the Financial Secretary to the Treasury whether he could state the amount of revenue derived from the duties on quack medicines in the years 1905–6, 1906–7, and 1907–8 respectively. Mr. Hobhouse replied that the amounts of revenue derived from the medicine stamp duty, to which the hon. member referred, were in the years 1905–6, 1906–7, 1907–8, £324,112, £327,106, and £334,142 respectively. When asked whether the increase was not due to the stamp giving a quasi-Government sanction to quack remedies, Mr. Hobhouse said there was no extraordinary increase—only from £324,000 to £334,000.

The Outbreak of Cholera in Calcutta.—In reply to a question last week, the Under Secretary for India stated that the Secretary of State had not yet received Mr. Haffkine's full report; but from a preliminary report made by him it appeared that the outbreak of cholera was due to infection of the nurses' food by two servants, both in good health, who were found to be unconscious carriers of the bacillus.

Health Resorts (Ireland) Bill.—Last week Mr. MacVeagh introduced a bill to empower local authorities in Ireland to strike a rate not exceeding 2d. in the pound for advertising health resorts and watering places. The measure is backed by a number of members of both Irish parties, but is not likely to become law this session.

Plague in India (Punjab).—The Under Secretary for India stated, in reply to a question by Mr. Rees, that the plague mortality in the Punjab in 1908, excluding native states, was given in the most recent returns as 30,708, against 608,685 in 1907. The death-rate from plague in that province in 1908 was 1.53 per 1,000; that from small-pox was 1.42 per 1,000.

The Mortality in South African Mines.—Colonel Seely stated last week that during the quarter ended on March 31st, the latest period for which figures were available, the rate of mortality from all causes per 1,000 per annum was—Chinese, 15.95; natives, 35.4.

The Oaths Bill, which does away with the necessity of kissing the Book, passed its third reading in the Commons last week.

Scotland.

[FROM OUR SPECIAL CORRESPONDENTS]

SCOTTISH SANITARY CONGRESS.

THE thirty-fifth annual congress of the Incorporated Sanitary Association was held at Ayr on September 2nd. The President, Councillor W. F. Anderson of Glasgow, in his opening address, dealt with some of the difficulties in the way of securing progress in public health. One difficulty which seemed to be growing in Scotland was the undue and unnecessary interference of Government departments with purely local administration. It was a mistake to suppose that a rule or plan that might be admirable for one city or town must be equally good for another place and a quite different set of circumstances. The Government department should be maintained to advise and direct authorities in cases of difficulty or dispute with adjoining local authorities. In spite of many difficulties, however, the history of the public health movement had been a glorious one. A peaceful revolution had been brought about—one in which thousands of lives had been not lost, but saved, to the community.

Infantile Mortality.

Dr. Florence Mann of the Public Health Department, Glasgow, read a paper on The Working of the Notification of Births Act. Dealing with the Glasgow scheme of infant visitation, she detailed the work of the women inspectors, who visited every house in which a birth had occurred where they had not been informed that a medical practitioner was in attendance. The inspector gave to the mother such instruction and advice as might be possible. The number of such visits paid during 1908 was 10,497. If the problem of infantile mortality was to be properly dealt with, the mother herself must be reached before the birth of the child. Of the deaths of children under 1 year of age in Glasgow, practically one-third was due to immaturity, a condition of things which after-care could do little to remedy.

Education of Midwives.

Dr. Campbell Munro, M.O.H. Renfrewshire, spoke on the need for educating midwives. He moved a resolution urging upon the Secretary for Scotland the expediency of introducing in the next session of Parliament a Midwives Bill for Scotland upon the lines of the English Act, with such amendments as experience and the recent report of the Royal Commission had shown to be desirable.

Compulsory Notification of Phthisis.

Dr. Clark Trotter, M.O.H. for Paisley, in opening a discussion on "The adoption of notification of phthsis by local authorities," said that the voluntary system of notification had proved to be inadequate and unsatisfactory. The trend of present day hygienic methods was towards home visitation and instruction. He had been struck by the results of such visitation, both in connexion with the control of phthisis and the care of infants, and he believed that the advances as regarded the health of the community beyond the stage at present attained would depend largely upon this factor. It was by such means, united with such curative measures as dispensaries, sanatoriums, and isolation homes, that it might be hoped in time to reduce the phthsis cases to numbers comparable with other infectious diseases, and the cost of their efficient treatment would then cease to be excessive.

The discussion which ensued was generally in favour of compulsory notification followed by visitation and treatment. The President, in the course of a few remarks, observed that compulsory notification might be followed by the provision of accommodation and treatment of phthisis. In Glasgow, he said, practically all notifiable diseases were sent to hospital. No fewer than 1,200 persons died of consumption in that city during the year, and, on the statistics of Dr. Philip, it might be reckoned that there were 10,000 persons suffering from phthisis in Glasgow. He did not believe that, but, taking the figures at a more moderate estimate, and saying that there were 4,800 consumptives ready for hospital, in what position would the authority be? Supposing it provided accommodation for 4,800 consumptives ready for hospital, the estimated cost for food alone was 25s. a week a head, or about £5,000 a week. It was a very serious problem, and he thought it would be a mistake for the Congress to tie itself down to any hard and fast resolution. It would be better if all the local authorities represented endeavoured to work out the problem according to their own circumstances and requirements.

The Spread of Disease by Milk.

Dr. Alexander Robb, Medical Officer of Health for Midlothian, in a paper on the subject, after dealing with the Milk and Dairies Bill, which would tend towards obtaining a milk supply free from danger of contamination, said that it stood to reason that any animal which was suffering from disease likely to infect or contaminate milk should not be kept along with cows in milk. He would have liked, however, to have seen a further clause embodying the principle that when a person at a dairy suffered from an infectious disease which could be spread by milk such person must be removed from the premises or the milk supply stopped.

GLASGOW CANCER HOSPITAL (FREE).

The Glasgow Cancer Hospital (Free) was founded in 1890, and enlarged in 1896, for the treatment of patients suffering from cancer, and for the advancement of the medical and surgical scientific knowledge of the disease. It was soon recognized that in a large city like Glasgow the establishment of such an institution was amply justified, and the supporters of the institution have realized for a very long time that in order to carry out the work the hospital would require to be rebuilt, or more extensive premises acquired in another part of the city. The site of the old building in Garnethill is an ideal one, being on one of the highest eminences of the city, and after the managers had consulted with the staff, etc., they decided that the solution of the difficulty was to rebuild the hospital on the present site.

The portion now to be opened for patients comprises four large wards, each containing eight beds. These wards are lighted from three sides, the principal light being from the south. Although the site is a limited one, the buildings have been so arranged that the wards to the north project beyond the south wards, and have the advantage of receiving a south light, and have also a south balcony. In addition to the wards for eight beds, nine single rooms have been provided, all with a southern exposure. These will be used for patients requiring isolation. A convalescent ward has also been provided.

All sanitary annexes are contained in towers, which are entirely cut off from the wards and are fitted up with the most approved pattern of baths, lavatories, and basins. Various fittings and furnishings specially suited for the particular class of patients to be treated have been installed. These will add very materially to the convenience of nursing and to the comfort of the patients. On each flat a large surgical dressing-room is provided, fitted up with suitable basins, sterilizers, etc., so that all surgical dressings may be carried out in this room. The beds are of the "balcony" pattern, so that patients can be removed from the ward to the surgical dressing-room and wheeled back again to the ward with the least possible inconvenience and the minimum of discomfort. An operating theatre will be provided on each ward level.

The top of the building has been fitted up as a research department. The light here is from the north, and, as the building stands on a very high eminence, the light is ideal for a city site. In the basement is placed a fully-equipped kitchen, which is ventilated by means of an electric fan, so that the odour of cooking will not permeate any part of the hospital. The buildings are lit by electricity, and there is a complete installation of telephones.

The nurses' home occupies the western portion of the site. Each nurse is provided with a separate bedroom. There are also dining-rooms, sitting-rooms, etc., along with the suite of rooms for the matron.

Behind the main building a complete and up-to-date laundry has been erected, in which the most modern machinery has been installed, worked by electricity, and, in addition, there is provided a destructor and steam disinfector. Quite detached from the main building, a small mortuary and mortuary chapel have been erected.

The whole building is heated on the "Reck" system by means of radiators. Each radiator is under direct control, and has a supply of cold air, guarded by a regulator, so that any portion of the building may be heated to the required temperature.

The patients will shortly be removed from the old portion of the building into the new wards in order that the older portions remaining may be entirely rebuilt, and in six months it is hoped the whole building will be finished, thus completing the whole institution. The entire buildings will then be on modern lines, as they are designed in every detail for the particular class of work which is to be carried out.

This institution, which had a small beginning, has gradually developed, and the directors trust, and confidently believe, that when the Glasgow public fully appreciate the boon which it has been, and will be, to the community of Glasgow, the needed support for its upkeep will be forthcoming.

All the building and equipment have been carried out under the supervision of Dr. D. J. Mackintosh, Superintendent of the Western Infirmary, Glasgow, by Messrs. James N. Monro and Son, architects, Glasgow.

Sir George T. Beatson, K.C.B., M.D., the senior surgeon of the staff, has taken a deep interest in the whole scheme, having had the responsibility of being Chairman of the Building Committee.

While the treatment of the patients is obviously the first duty of any hospital, the directors of this institution have been far-sighted enough to appreciate the fact that unless scientific study of the subject accompanies the clinical work, little progress can be made, and, as a consequence, in considering the clinical aspect they did not lose sight of the absolute necessity of providing for a research laboratory. This side of the subject has received careful consideration, and valuable assistance from Professor Muir and Professor Noel Paton, of the University of Glasgow, was obtained, and we look forward to much important research work being done under its roof.

DUMFRIES.

What is regarded as a notable development in the educational history of Scotland, the institution of the Moat Hostel, Dumfries, was formally inaugurated on September 8th by Sir James Crichton-Browne, LL.D., F.R.S. The Hostel, formerly the Moat House, is a gift made by the late Dr. McKie for the reception and accommodation of girl pupils attending Dumfries Academy (principally junior students in training as teachers), whose homes are situated at such a distance from the town as to render daily travelling out of the question. Dr. McKie also gave £1,000 towards adapting the building to its present purpose, a condition being that, before proceeding to establish a hostel, the trustees should receive from the Education Committees of Dumfries and Kirkcudbrightshire an undertaking that the whole pecuniary responsibility for the maintenance of the hostel and any expenses incurred in future years in its extension or equipment would be met from imperial funds administered by these committees. The undertaking has been implemented. There is accommodation for 47 girls, and the full complement is now in residence. It is the first and as yet only hostel in Scotland.

KILMARNOCK.

The Infectious Diseases Hospital, which the Corporation of Kilmarnock has erected at Kirlandside, was formally opened on September 11th. The hospital consists of seven different blocks, and provides accommodation for forty-eight beds. The total cost of buildings, furnishings, site, etc., amounts to £20,000.

MEDICAL INSPECTION IN DUMFRIESSHIRE.

The Dumfriesshire Secondary Education Committee has formulated a scheme for the medical inspection of school children. The total cost is put at £1,350, made up as follows: Chief medical officer, £550; senior medical officer, £300; junior medical officer, £225; clerk, £50; travelling expenses, £225.

EXTENSION OF ABERDEEN INFIRMARY.

The Directors of the Aberdeen Royal Infirmary propose to spend about £12,000 on alterations and extensions to that institution.

Ireland.

[FROM OUR SPECIAL CORRESPONDENTS.]

DUBLIN.

Home Treatment of Tuberculosis.

THE quarterly meeting of the Hospitals Tuberculosis Committee was held in 76, Grafton Street, on Thursday, September 9th. Sir Arthur Chance was in the chair, and among those present were the Countess of Aberdeen, accompanied by Lady Pentland, Dr. M. F. Cox, Dr. Alfred Parsons, Dr. G. Peacocke, Dr. T. Percy Kirkpatrick; Dr. J. Lunsden, and Sir William J. Thompson, Honorary Secretary.

The report of Dr. Daniel, who had been placed by the Women's National Health Association at the disposal of the Committee to attend cases that were receiving no medical aid, was most satisfactory. It was felt that in this way a great want was being met.

The work done during the last six months by the two Tuberculosis Jubilee nurses working in Dublin was next reported. Two hundred and forty-seven patients have been attended; of these, 125 were old cases and 122 new cases. In all, 3,504 visits were paid to the patients' homes. It was a significant fact that almost two-thirds of the patients themselves sought the nurses' aid. This is not to be wondered at when it is realized what is done for their patients through the Samaritan Committee, in addition to the actual nursing, help, and advice which enables patients to carry out doctors' orders in their own homes: 63 families received nourishment; 39 families received clothes, shoes, bedding, etc.; 10 families' rent was paid while the breadwinner was under special treatment; 87 children of parents suffering from tuberculosis were sent to the country through the Fresh Air Fund; 3 families of children were boarded out while the mothers were in hospital; 60 rooms were disinfected; 5 families were removed to more healthy homes; for 7 patients work had been obtained, and 16 patients had been admitted to Newcastle. There were 66 families occupying one room, and in 35 families more than one member was affected. The total earnings of the families attended when the breadwinner is ill is estimated not to exceed 5s. a week on an average.

Mrs. A. M. Sullivan, the convener of the Samaritan Committee, reported "that £130 had been spent on tuberculosis cases since February, 1908, and that does not include subscriptions collected for some patients for Newcastle. Then a large quantity of clothing was given to patients; beds or beddings were equipped, and in addition all the charitable societies were generous in their help." Mrs. Sullivan will gladly receive any help in furtherance of this cause.

The nurse employed by the Terenure Branch of the Women's National Health Association reported that for four months she attended 22 consumption patients and paid 214 visits. She also has been the means of giving a great deal of assistance to patients in the way of beds, clothes, and nourishment, in addition to the ordinary nursing.

The three nurses and the doctor remark that patients or their friends ask that their homes be disinfected. This fact, together with that mentioned before, that two-thirds of the patients request the nurses' services, shows that the people among whom the nurses work are commencing to understand something about the nature of the disease, and are themselves assisting in trying to stamp it out.

THE PREVENTION OF TUBERCULOSIS BILL IN IRELAND.

That the new Prevention of Tuberculosis Bill would not be much of a success in Ireland was anticipated by those conversant with the character of the local sanitary authorities who were entrusted with the permissive adoption of it. These anticipations have not been falsified. It was believed that local councillors who would not adopt the Infectious Disease Notification Act because it involved the payment of half-crown fees to the doctors, would reject the Notification of Tuberculosis Bill for the same reason, but it appears that they have discovered a still stronger reason for objecting to it.

The local councils evidently regard it as another attempt by the myrmidon of an alien Government to ruin Ireland, especially as it followed on the heels of a

compulsory bill which implied that Irish cowsheds were insanitary, and which had been bitterly contested. Indeed, nothing but the threat of the Local Government Board to apply for a mandamus has induced many of them to appoint inspectors of cowsheds. Then the fact that the Prevention of Tuberculosis Bill applies only to Ireland makes the insult still greater.

It was stated in the Journal at the time when the bill was first printed and circulated that compulsory notification without compulsory provision for the cure of the patients would only inflict useless hardships upon them, and many doctors assert they would rather pay the price than notify cases in which such notification would deprive the sufferers of their means of living—school teachers, for instance—and yet for whom no means of cure would be provided. Some few sanitary authorities have adopted the notification clause, but, with the exception of Dublin and Belfast and some other large towns, none of the rural councils have, so far as we know, adopted the other clauses.

Cork.

The Prevention of Consumption.

At the meeting of the executive committee of the Cork Branch of the National Association for the Prevention of Consumption on September 10th the members present passed a resolution drawing attention to certain statements which had recently been made public regarding the prevalence of consumption in Ireland, and, recognizing the danger to the public caused thereby in producing a false sense of security, the association drew attention to the report of the Medical Officer of Health for Cork for the past year, in which Cork possesses the unenviable notoriety of having the highest consumption death-rate of any town in Great Britain and Ireland, one-seventh the total number of deaths being from that disease. The death-rate from phthisis was nearly twice greater than for all other infectious diseases put together. During the past year, however, the death-rate from consumption for the whole of Ireland has decreased a little, and the association says this is largely due to the efforts of the Women's National Health Association in educating the people, and it is to be hoped that its good work will in the future meet with the encouragement and success which it deserves.

Joint Hospital Board.

The Cork County Sanatorium, which is situated at Streamhill, near Doneraile, is nearing completion, and it is expected that the buildings will be ready for the reception of patients by November. The sanatorium will contain 70 or 80 beds, and is to be under the supervision of a resident medical officer, who must have had, amongst other qualifications, at least one year's experience as resident medical officer in a general hospital or infirmary.

The Castlerea Union.

The election of a medical officer for the Frenchpark dispensary district took place at a recent meeting of the Castlerea Guardians. Dr. Beirne was elected by 19 votes to 18. Before the election took place each candidate was required to sign an agreement to accept a scale of fees laid down by the guardians for attendance upon private patients, but as this was not stated in the advertisement, it is doubtful if the Local Government Board will sanction the election on such terms.

England and Wales.

[From Our Special Correspondents.]

LIVERPOOL.

Annual Report of the Medical Officer of Health.

The annual report of the medical officer of health continues to grow in bulk and shows no diminution in interest. It now reaches about 300 royal octavo pages. It is not a mere statement of tables and statistics; it is full of human interest, and reveals a degree of progress in sanitation and in moral and physical well-being of which the city and the medical profession in it may justly be proud. The birth-rate is the same as in the previous year, 31.7. The death-rate (18.5) is practically the same as last year (18.3), and is, with that exception, the lowest on record—a remarkable fact, in view of the exceptional distress which prevailed in consequence of trade depression. Zymotic diseases seem to be in the process of becoming extinct except among children. Six hundred and thirty deaths were due to diarrhoea; measles, scarlatina, and diphtheria caused 612 deaths, and whooping-cough 346. These deaths were, of course, almost exclusively of young children. On the other hand, typhoid and typhus account for only 83 deaths, the deaths from typhoid (73) being the lowest on record, and from typhus (8) the lowest but one.

Tuberculosis.

A large section is given to tuberculosis, and the remarkable diminution in the prevalence of this disease is pointed out. It appears from the report of a special commission of inquiry made sixty years ago that at that time 100,000 of the inhabitants were living in houses so aggregated and so constructed as to be from those circumstances alone unfit for human habitation, and that 40,000 were living in cellars. The report speaks of the absence of light and ventilation; of the darkness and filth; of overcrowding, especially in the cellars and lodging-houses, which were without supervision. The condition of the schools was wretched in the extreme—dark, confined, damp, and dirty; they were used as a dwelling, a dormitory, and a school room, and the atmosphere was offensive with filth. There was an absence of water supply and of drainage and scavenging, the condition being aggravated by extreme poverty. Since this gloomy picture was painted millions of pounds have been spent in demolishing insanitary property and replacing it by wholesome dwellings and in other sanitary improvements, with the result that during the last forty-three years alone the mortality from all forms of tuberculosis has fallen to almost exactly one half.

When insanitary property is demolished and corporation dwellings are built on the site, the new buildings are for the most part occupied by the same families that occupied the old. The only difference in the circumstances of the people is, therefore, that they now occupy sanitary dwellings while before they did not. The mortality from phthisis and diseases of the lungs in the demolished areas was notorious, but in the corporation dwellings, taken as a whole, notwithstanding the history of the occupiers, the phthisis mortality was during 1907–8 actually 1.35 per 1,000 lower than that of the city taken as a whole, and very considerably below that of the districts in which the dwellings are situated. From this the medical officer draws the obvious but no less important lesson that the right way to spend public money is not in the construction of sanatoriums and the treatment of patients therein in order to deal with phthisis, but to demolish the slums, to purchase the sites, and to erect sanitary dwellings thereon.

For the treatment of persons already suffering from phthisis there are 144 beds available—namely, 70 in the Consumption Hospital and the associated sanatorium at Delamere, 24 in the Poor Law sanatorium at Heswall, and 50 in the corporation fever hospital at Fazakerley. The need for a special fund to support the family while the breadwinner is undergoing treatment in one of these institutions is pointed out. Dr. Hope, while insisting on the paramount importance of the prevention of phthisis, is a firm believer in its curability, and asserts that "the evidence is conclusive that attacks of phthisis, in the vast majority of cases and under ordinary circumstances, are recovered from." This is certainly a very strong statement. If by phthisis is meant a tuberculous affection of the lungs, attended with wasting and constitutional symptoms and capable of diagnosis as tuberculous, most practitioners will consider that it is much too strong. If, on the other hand, a local tuberculous deposit without wasting is meant, it is scarcely legitimate to apply the term "phthisis" to such a condition. The compulsory detention of advanced cases in order to obviate the risk of infection is suggested as desirable.

Useful work is being carried on by inspectors and visitors when cases are reported in the homes of the poor, and the lessons patients learn while in hospital are for the most part acted on after they have left.

Cellar Dwellings.

About 5,370 people are still housed in cellars, but under the powers of a recent Act no cellars can be occupied as separate dwellings after December 31st, 1912.

Midwives.

There are 317 certificated midwives in the city, of whom 173 only practise on their own account, the rest being in the employ of public institutions, engaged as maternity nurses under a medical practitioner, or in some other employment. The number of cases attended by the 173 in private practice was 13,423—that is, an average of 78 cases to each. Twenty midwives attended 5,433 cases. If we take 7s. 6d. as the average fee for attending a confinement, the average yearly income of midwives in Liverpool only amounts to £29 5s., and the average income of the 20 most successful midwives is only £102. When one considers the cost of living, the arduous nature of the work, and the responsibility involved, it is not clear that midwifery has any advantages over the better class of domestic service. The arrangements for reporting serious ophthalmia are stated to work well, and the beds set apart in the St. Paul's Eye Infirmary for the reception of the mother and the infant are referred to. It appears that the midwives not infrequently, when sent for on an emergency, cannot obtain their fees. Two of the boards of guardians have consented under special circumstances to give the midwife an emergency fee, but the other board, apparently not recognizing the suddenness of the emergency in these cases, holds that application should be made to the relieving officer. Medical assistance was required in 775 cases, about 5.7 per cent. of the whole. One guinea is always paid the practitioner in such cases, if not by the patient then by the Health Committee.

School Hygiene.

Regret is expressed that the clause in the Education Code of 1903 which provided that the absences of children from school on account of infectious sickness in their homes should not be deducted from the record of attendances, has been withdrawn from subsequent codes. Also that the Standing Committee of the House of Commons did not sanction a clause in the Corporation Bill of 1908 which would have compelled parents to notify the presence of infectious disease in the home of a scholar. The latter power would have been most valuable in dealing with measles and whooping-cough.

WALES.

GLAMORGAN ANNUAL REPORT.

DR. W. WILLIAMS, Medical Officer of Health for Glamorgan, has just issued his annual report to the County Council. The birth-rate was 35.95, 9.4 in excess of that for England and Wales, whilst the general death-rate was 15.84, as compared with 15 61 for 1907, and was 1.1 higher than the rate for England and Wales. As regards the provision of isolation hospitals, satisfactory progress continues to be made, and there is every reason to believe that within a year or two each district in the county will possess means of isolation for their infected sick. Considerable time has been devoted to the administration of the Midwives Act 1902, and there is considerable evidence that this Act is having the beneficial effects anticipated. Amongst the individual districts the birth-rate varied from 44.8 to 13.0, the highest being 44.8 in Neath Rural, 42 0 in the Rhondda, 40.3 in Gelligaer and Rhigos, 39.8 in Mountain Ash, 39.7 in Ogmore and Garw, 39.1 in Aberavon Borough, and 39 0 in Llantrisant and Llantwit Sardre. As is usual, the birth-rates are highest in the industrial and mining districts, and lowest in agricultural and residential districts. The general death-rate is 16.04, which is 1.34 higher than the average death-rate for England and Wales, whilst the nett death-rates range from 20.2 to 8.0. Of the total deaths 3,550 were those of children under one year, equivalent to an infantile mortality of 152 per thousand births. The causes of this high infantile mortality are discussed at length in several of the reports; they point out that, though it is generally acknowledged to be largely preventable, yet it is dependent to a great extent on climatic and meteorological conditions. Amongst the important causes mentioned are early marriages, improper feeding, insanitary surroundings, and substitution of artificial for breast feeding. The work of reducing the appalling mortality of infants should not, it is added, be left to sanitary or education authorities only. It was a work in which the parents should be made to realize their responsibilities, and in which social, philanthropic, and religious institutions had great opportunities of assisting. The zymotic death-rate was 2.21 as compared with 1.71 for 1907. The number of deaths caused by the various forms of tuberculosis was 812, or one-eleventh of the deaths from all causes, and yet, as Dr. Williams states, compared with our action against the ravages of scarlet fever, diphtheria, and typhoid fever, which altogether accounted for 215 deaths, we are doing very little towards stamping it out; 355 deaths were attributed to cancer and malignant disease. Considerable activity has been shown in improving the houses and sanitary surroundings of the working classes. Dealing with the pollution of rivers and streams in the county, the report states that the condition of the rivers in Glamorgan is undoubtedly improving, especially in regard to sewage and tinplate works effluents. However, these rivers are far from what they should be and might be. The Rivers Pollution Prevention Acts should be amended so as to make it an offence to allow the discharge into any river or stream of the waste water from coal-washing machines unless the same is passed through efficient settling ponds or tanks.

NEW UNIVERSITY GRANTS.

The long-looked-for allocation by the Treasury of the additional grant of £15,000 a year to the University of Wales and the constituent colleges has at last been made known. Though in many respects it is open to criticism, the fact remains that higher education in Wales has been further assisted to the extent named. Still, this amount is nothing in comparison with the additional grant given for university education in Ireland, and Welshman must not be satisfied with receiving only as much for their university and its three colleges as is given to one of the smallest colleges in Ireland. The £15,000 has been divided as follows:

	£
University of Wales (for Fellowships) ...	1,500
Aberystwith University College	4,000
Bangor University College	4,000
Cardiff University College	5,500

The £5,500 for the Cardiff University College is definitely allocated as follows:

	£
To increase salaries of principal, professors, and heads of departments	2,000
Medical school	1,500
Library and scientific equipment	1,000
Further historical assistance	500
Pension fund	500

The grants for Bangor and Aberystwith are allocated in the same way as in Cardiff, except that the latter receives an extra £1,500 for the medical school.

Western Australia.

LUNACY.

ON December 31st, 1906, there were 546 certified insane persons in this State, and on December 31st, 1907, there were 630, giving an increase for the year of 84. Dr. S. H. R. Montgomery, from whose annual report for 1907 the following information is abstracted, says that this increase is the largest ever registered in this State, being 32 more than that of 1906 and 43 above the average increase of the preceding five years. The population of Western Australia on December 31st, 1907, was 263,846, the ratio of insane persons to general population being thus 1 to 418. Dr. Montgomery points out, however, that this proportion is greater than it should be, as many thousands of the people in Western Australia leave for the Eastern States about this time to return some months later, this temporary exodus thus factitiously elevating the ratio. Nevertheless, a table furnished by Dr. Montgomery shows that there has been a very rapid increase in the insane in the State in recent years, this ensuing naturally upon the altered character of a population which was at first composed largely of young and healthy immigrants, whereas now the country gains its population principally by natural increase. The ratio of insane to population in Western Australia is lower, however, than that of any other State in the Commonwealth, that for the year 1906 of South Australia

being 1 to 390; New South Wales, 1 to 277; Queensland, 1 to 264; and Victoria, 1 to 250; as compared with Western Australia's 1 to 479. The ratio in New Zealand in the same year was 1 to 286. On the last day of 1907 the 630 certified insane were distributed as follows: In the Freemantle Hospital, 403; in Claremont Hospital, 171; in Whitby Hospital, 48; and on trial, 8. As regards nationality, 272 were natives of Australasia, 6 being aboriginal or half-caste; 248 were natives of Great Britain, England and Wales contributing 131, Ireland 105, and Scotland 12; 56 were natives of other European States; 31 were of Asiatic, 2 of African, and 16 of American birth. Only 43 per cent. of the inmates of West Australian asylums, therefore, were natives of Australian States.

Admissions.

During the year 208 were admitted, of whom 185 were first and 23 not-first admissions, being the largest number of admissions recorded in one year in Western Australia. The admissions were classified, according to the forms of mental disorder, into: Mania of all kinds, 81; melancholia of all kinds, 25; dementia of all kinds, 29; delusional insanity, 37; general paralysis, 25; and idiot or imbecile, 11. As probable cause, alcohol was assigned in 31, or just under 10 per cent.; opium in 6, venereal disease in 25, senility in 16, epilepsy in 14, moral causes in 31, and the remainder were distributed over the other usually assigned etiological factors. An insane heredity was ascertained in only 6, and previous attacks had occurred in only 13.

Discharges, etc.

During the year 60 were discharged as recovered, giving a recovery-rate on the admissions of 28.84, as compared with the average for the State of 37.32 per cent.; also 9 were discharged as relieved, 3 as not improved, and 1 escaped. During the year 51 died, giving a death-rate on the average numbers resident of 8.65 per cent. The deaths were due in 19 to cerebro-spinal diseases, including 10 deaths from general paralysis; in 14 to chest diseases, including 8, or 15.6 per cent. of the total deaths, from pulmonary consumption; in 7 to senile decay; and in the remainder to abdominal diseases. All deaths were thus due to natural causes.

Cost.

The weekly cost of maintenance per head, after deducting collections, was 12s. 2d.

Special Correspondence.

BERLIN.

Transfer of the Prussian Medical Ministerial Department.—Proposed Women's Hospital Officered by Women.—Overcrowding of the Profession in Germany.—New Medical Institutes.

AFTER a long period of preliminary deliberations the Prussian Government has finally decided to transfer the Medical Ministerial Department from the much overweighted Cultus Ministry to the Ministry of the Interior. It is hoped that by this change the Medical Department, which of late years has grown immensely in importance, may gradually acquire more independence and wider scope.

Berlin is behind other great cities, such as London and New York, in not possessing a women's hospital in the exclusive charge of female doctors. This want, a very real one, no doubt, will shortly be supplied. A committee of female doctors has been formed and the preparatory steps taken. Dr. Agnes Hacker, of Schöneberg, Berlin, is the guiding spirit and president of the committee.

The annual report presented to the Union of German Medical Practitioners (a representative body numbering almost 23,000 members) proves that the serious overcrowding in the profession, so often vaguely complained of, was shown by the statistics of the employment bureau of the union to be a sad reality. Though no fewer than 941 assistants, 2,109 locumtenents, 240 ship doctors, 618 general practitioners, and 138 student assistants were able to find employment or settle in practice through the instrumentality of the bureau, there remained 280 doctors for whom no post nor any settlement with a fair hope of success could be found. Nor is there hope that we may see a better balance of supply and demand in the near future; for, whereas during the winter 1905–6 the number of medical students in German universities was 6,080, in 1908–9 it rose to 8,558—an increase of close on 2,550.

At the same time one hears and reads almost daily of new institutes for the care or cure of some highly-specialized ailment amongst the ills that flesh is heir to. Still the patients come, especially to the charitable institutes, showing that the need was there—or perhaps in some cases that a need has been created. Among the numerous new institutes near Berlin, mention should be made of two: The home for children with inherited syphilis, and the middle-class sanatorium at Falkenhagen. The nursing home is intended for infants up to the age of 4. A private charitable committee has bought a well-built country villa at Friedrichshagen, near Berlin, the garden of which runs down to the Nüggelsee, the largest lake near the eastern suburbs, and has arranged the whole to suit its objects. As to the middle-class sanatorium, it has nothing to do with charity, but is meant, and bids fair, to be a paying concern. It takes a medium position between the people's sanatoriums and the numerous fashionable sanatoriums with prices so high that their continued prosperous existence is a proof of the increasing prosperity of Germany. "Haus Falkenhagen" lies in its own pine-forest grounds, about half an hour's rail and a short drive from Berlin. It has a fine orchard and large vegetable garden; the bedrooms and general rooms are well-furnished and thoroughly hygienic; there are good arrangements for hydropathic, for electric and mechanical treatment, for rest cures, etc. The air and sun baths have their own open-air douches. Everything is comfortably, but not luxuriously, arranged. The prices range from 4.50 marks to 8.50 marks (4s. 6d. to 8s. 6d.) a day, including treatment. There are no extras. The hundred beds of the establishment are already fully engaged; as yet it has been open to men only, but there is every prospect that a wing will shortly be added and ladies admitted as in other sanatoriums. It is understood that tuberculous patients are not to be received.

Correspondence.

HOME CONDITIONS AND EYESIGHT.

SIR,—With reference to Mr. L. F. Richardson's letter (p. 575),. I think few who have ever seen anything of dispensary or other lower-class practice can fail to have observed that the children of respectable artisans are kept much indoors by their mothers, to avoid contact with their inferiors. They may consequently often escape contagious and infectious diseases, such as scabies, but they use their eyes more in reading and have less opportunity of using them on distant objects, and of exercising the power of accommodation.—I am, etc.,

Bradford-on-Avon, Aug. 29th. JOHN BEDDOE.

SIR,—With regard to Mr. L. F. Richardson's letter on this subject, I am afraid it is impossible to give any weight to the "general experience of Christian workers, philanthropists, and school teachers" until that general experience is expressed in reliable statistics. Further, these classes are apt to overlook points which from the statistical side are very vital; for example, that there exists—for we have measured it—a correlation between the age of a child and the number of persons per room; and, again, between the number of rooms and the age of the children. There are further correlations between the physique of the father and his wages and between his wages and the number of rooms. The heredity factor is not removed when we simply correlate number of rooms and stature of child. To ascertain how far the environment as to rooms influences the stature of the child, we ought to obtain the *partial* correlation between rooms and stature for constant physique of parents. This Mr. Richardson has not attempted, but it is essential to a *final* judgement in the matter. As to the blind, it is impossible to include them in a graduated refraction table did data exist, which they do not. Further, Mr. Richardson has, I think, increased by 80 per cent. the real value of the correlation between stature and number of rooms for boys of 10 years, even when we disregard the corrections indicated above. On his own showing this correlation is about *half* the importance of the hereditary factor for one parent, about *quarter* the importance for both parents together. But even this conclusion appears to be largely the result of the hetero-

geneity of the material. The Glasgow schools are divided into four groups, which correspond largely to higher and lower classes of workers. Mr. Tocher's paper has shown the racial mixture—with Highland, Lowland, Irish, and Italian factors—to be found in Glasgow. Treating the school groups separately, we have for age 10:

Group A: Correlation ratio	= .14	
Group B: ,, ,, ...	= .13	Mean .13.
Group C: ,, ,, ...	= .09	
Group D: ,, ,, ...	= .15	

This shows that the higher value, .23, found by Mr. Richardson is largely due to the different classes of schools having different types of boys. If the inferior type of labour—that is, that with more crowded homes—has a larger Irish and Italian element, there is a racial contribution to .23, which is not an environmental contribution at all. The above analysis for the separate school groups seems to indicate that 44 per cent. of the value .23 may be solely due to mixture of different races, and for this reason Glasgow is not a good centre to study stature at. The influence of environment, if measured by .13, is only about one-fourth that of heredity—one-eighth almost if we select *both* parents—and of this value it remains to be seen how much is an *indirect* effect of heredity. It is probably the "general experience of Christian workers, philanthropists, and school teachers" that the physically degenerate parents are to be found in the smaller-roomed houses.

On all these points the Galton Laboratory has already collected much material, and a summary of its work will be found in Miss E. M. Elderton's lecture on the "Relative Strength of Nature and Nurture," just issued by Messrs. Dulau and Co.—I am, etc.,

KARL PEARSON.

Galton Eugenics Laboratory, University of London,
September 13th.

CLINICAL TEACHING.

SIR,—At this period of the year, when clinical teachers all over the kingdom are reviewing their winter's work, would it not be worth while to consider the best methods of taking full advantage of the vast clinical resources available in our hospitals, and of giving our students such a practical training as would best fit them for their life-work? Nine-tenths of these students leave the universities and schools to become general practitioners, and only a small proportion of them get an opportunity of further clinical work before they actually begin practice on their own account. The present system of delivering clinical lectures is admittedly of value, and the value is at its maximum when no regular systematic course is given in the schools; but, where such a course on any subject forms a compulsory part of the curriculum, it seems useless to add on a few more systematic lectures in the hospital wards, even with an actual example of the particular disease before the class as a text. In many cases—most, in my own experience—only a few casual references are made to the patient's symptoms during the lecture. Perhaps one or two symptoms are actually demonstrated to a few near the bed, but, to the great majority of the class, a clinical lecture simple means a summary of facts that may be gleaned from textbooks, but delivered over the body of a patient. This, to my mind, is not the best form of clinical teaching, nor does such a method make the most practical use of the material or help the student to the fullest extent possible to understand the disease and to diagnose it correctly when he meets it again in after-practice. It tends to make him rely more and more on laboratory methods, excellent in themselves, but frequently unattainable, easily and quickly, in a practice remote from a research centre.

Is any better method available? Large classes offer a considerable difficulty in the bringing of every student into actual contact with each case, but the number of clinical teachers is now so great that this could be overcome were other obstructions removed. There is, and must always be, in places where the teacher is also an examiner, the temptation for all the students to follow such a teacher in order to familiarize themselves with his pet subjects, which are always likely to meet them in their examinations, but this could be overcome either by having a few central boards of examiners or State examinations, or by allowing any teacher to become an examiner in his own school. Something like the latter method is being tried in one of the Scottish centres, and the former method is common, I believe, in London. What should be aimed at in clinical teaching is that each student be taught to feel himself responsible for the care of a number of patients, be made to go through the whole of the examination of such patients, the mental weighing of facts, and the physical, chemical, and microscopical tests that have to be done before a diagnosis is made. He should do all this under the guidance of a capable teacher first, and should be cross-questioned on his statements and reasoning, and be allowed to question his teacher in order to elucidate his own difficulties. He would thus take a personal interest in his patients, and would be fostered to rely on his own skill in diagnosis. Next, he should be asked to suggest treatment and to prescribe medicines, be made to watch the case as it progresses, be asked almost daily as to the progress and the reasons for his beliefs.

All this would take place before his class-mates, and while he would thus be made to follow the disease right through, his teacher would be a sort of consultant, to whose opinion he would defer whether he mentally agreed with it or not.

Such a method could be carried out by the students taking notes of the cases on the day of their admission to hospital, at first under the guidance or along with senior students, and discussing the notes next day with the teacher in presence of his fellow students, who might also be asked to examine and determine for themselves the correctness or otherwise of any particular clinical feature. The whole class would thus have their attention concentrated on the patient under discussion.

The out-patient department should be made much more use of than is done. Attendance here should be compulsory, for the work is more of the kind that the student will meet with in actual practice, and have to do by himself. Cross-questioning here is the only method likely to be used, and, with compulsory attendance, should be quite satisfactory. The junior and senior students could attend the out-patients during different sessions, which would relieve the congestion in the wards in the bigger schools. At present few students attend this department regularly, and then only when the teacher is popular. It is more common to find students taking a greater interest in a major operation than in out-patient work, and even then they do not follow the after-progress of the case; and while it might not be wise or necessary to exclude students from operations, it would be well to impress upon them that this is a very minor part of their study, a part which few will ever be called upon to perform, and even if they were, there will generally be time and opportunity to plan and study the operative technique before performing the actual operation. Most students are not capable of understanding major operations, nor of appreciating at its proper value the skill of the operator, because they cannot follow the minute steps of the operation, nor the difficulties met with and overcome. Such operations become mere stage performances from the average student's standpoint.

It would be a great help to every teacher who has at heart the best interests of his students, and who works to equip them as thoroughly as possible for their profession, if a discussion on this subject were to be earnestly taken up in our JOURNAL, when writers could explain the methods adopted at their particular centre, the advantages and drawbacks of such, and the methods in vogue in other countries where they have attended clinics. During the actual discussion it would be better if the names of writers were withheld, as students and recent graduates would more freely express their views, and would not be afraid either of offending their old teachers or other authorities whose names they respect and whose views they would not willingly controvert.

Speaking for Scotland, such a discussion is much needed, and might lead to a radical change in the present methods of clinical study, so universally condemned by the students themselves, and it might even happen that many helpful hints would be gleaned by teachers whose methods are stereotyped by habit or conviction.

The discussion would need to be a purely academic one, successive writers stating their own views in preference to

occupying space in demolishing the methods advocated by previous writers.

I enclose my card.—I am, etc.,

September 13th. PROGRESSIVE.

COMPULSORY INSURANCE AGAINST SICKNESS.

SIR,—That the present system of medical attendance is far from satisfactory, and that changes are imminent that will materially affect the status and incomes of medical men, must now be abundantly evident to all who have given even a cursory attention to the Reports of the Poor Law Commission, and the proposals put forward by the present Government. Such is the trend of events that the latter may now probably be regarded as of most importance. So far as medical men are concerned, the recommendations of the Majority Report are practically a reaffirmation of the *status quo*. They would probably affect the smaller towns and rural districts very little, while in the great centres of population dispensaries can never make headway while hospitals keep open doors. Further, in these days of decreasing sickness, the more shiftless of the working classes are showing themselves less inclined to contribute a fixed sum for illness that may not happen, as it is always possible to get medicine and advice for sixpence or less, and to be visited for a shilling. The Minority Report is a report of dreamers, of dreamers of beautiful dreams it may be, but of dreamers who, with one exception, know nothing of the conditions of practice outside London, and whose creed from first to last consists in a deification of that impossible and increasingly discredited body, the London County Council.

For your contributor's article on compulsory insurance against sickness and invalidity, the few who, like myself, have long believed that the salvation of medical men and the interests of the working classes can best be secured by the intervention of the State, are much indebted. For years past I have watched the working of the compulsory system in Germany, and my only regret has been that their system has received so little attention from medical men in this country. The final decision will not rest with medical men, but it is for them to point out, so far as sickness and the prevention of disease is concerned, what form compulsory insurance should take. It may be impractical, or even impossible, to have our own representatives in Parliament, but surely it is possible for all of us to bring influence to bear on those who now or in the future are likely to be our representatives in Parliament.—I am, etc.,

Greenwich, Aug. 30th. J. H. KEAY.

THE POSTMASTER-GENERAL AND POST-OFFICE APPOINTMENTS.

SIR,—As the letter signed "Observer," like many others, suggests that the Post Office staff have nothing to do with the appointment, but that it is a purely political job, I feel I must relate my experience.

Several years ago the postmaster of the town in which I live, who was not personally known to me, called at my surgery and informed me that the post of medical officer to the Post Office was about to become vacant, and asked me if I would like to apply for it. I did so, and was appointed. I found out afterwards that it was the wish of a majority on the staff at the office that I should be appointed which led the postmaster to approach me. I did nothing in the matter except to send in an application for the post.

I trust this experience will show that in at least one case the appointment was non-political nor unpopular with the Post Office staff, and surely this cannot be an isolated case.—I am, etc.,

August 31st. NON-POLITICAL.

SIR,—Being a stickler for accuracy, I cannot refrain from a rejoinder to "Observer's" letter in the JOURNAL of August 28th.

At the annual banquet of the Association of British Postal Medical Officers in London on July 14th, 1908, Mr. Buxton, the Postmaster-General, said:

> Since he had been Postmaster-General he had endeavoured to keep Post Office appointments free from politics. The appointments of Post Office medical officers would not be made for political reasons. That was common sense, for he would rather be properly attended to and cured by a Unionist or Tory than allowed to go to his grave by the most proper and extreme Radical.

It is common knowledge that when a vacancy occurs in an appointment the local permanent officials circularize the local members of the profession and invite them to become applicants for the position, and on the forms which applicants are required to fill up it is clearly stated that the use of political influence is forbidden. What more could "Observer" desire? Does he desire that any medical practitioner who has actively interested himself in party politics should be debarred from becoming a candidate if his party should happen to be in power? Of course the best man never is appointed, because naturally every man who is unsuccessful regards himself as the only one who was eligible for the post, and feels that once again there has been a gross miscarriage of justice.—I am, etc.,

August 30th. OBSERVER'S OBSERVER.

PRESCRIBER AND DISPENSER.

SIR,—I can agree fully with the opening sentence of Dr. Morison's letter (p. 574) that "the article in the BRITISH MEDICAL JOURNAL of August 21st on prescriber and dispenser deserves, and I hope will attract, the attention of the whole medical profession," but for reasons just the opposite of his.

I cannot admit that dispensing has diminished the efficiency of treatment nor that chemists can do it (dispensing) better than doctors; that is a slur on the teachers. Medical men in general practice are not so opulent that they can afford to diminish their incomes, and that would be the result if all the men who dispense were to give it up. The average fees in London and the larger towns to the industrial classes run from 1s. to 2s. 6d. for advice and medicine (see your advertisement columns), and the patients attend two or three times a week. Take a case of dyspepsia or chronic bronchitis; if a prescription be given, how often would the patient visit the doctor? Probably only once or twice during the illness, and the rest of the time the profit would go elsewhere.

I venture to assert that if a poll were taken of all the general practitioners in England whose work lies among the artisan and operative classes, the majority for continuing dispensing would be very large.

Some years ago the cry was that midwifery was derogatory, and only woman's work, except in operative cases, and registration and education of midwives was established. How many, especially among the younger members of our profession, now sigh for the lost source of income! I unhesitatingly assert the same result will happen if prescribing be made universal. I have tried both plans.—I am, etc.,

London, W., Aug. 30th. JAMES HAMILTON.

ARYLARSONATE TREATMENT OF SYPHILIS.

SIR,—In the JOURNAL of August 21st Dr. de Verteuil, R.N., asks whether it would be possible to combine mercurial treatment with injections of arsacetin (or acetyl-atoxyl). Blumenthal and Jacoby in the *Biochemische Zeitschrift* for 1909 (xvi, i, p. 20) discuss the toxicity of various substitution products of atoxyl, and they state that changes in the amido group, such as the substitution of one hydrogen atom by acetyl, forming arsacetin, make no difference to the toxicity of the mercurial compounds. This depends entirely on the amount of mercury present. Changes in the group containing the arsenic, on the other hand, are followed by considerable variations in the toxicity. Thus the reduction product of atoxyl or arsacetin (the oxide) is twenty or thirty times more toxic than the original substance. These results show that with arsacetin, as with atoxyl, it is necessary to wait a fortnight after the last injection before beginning mercurial treatment.—I am, etc.,

J. M. FORTESCUE-BRICKDALE, M.A., M.D.Oxon.

Clifton, Sept. 10th.

UNQUALIFIED PRACTICE: BONESETTERS.

SIR,—Through the note in the JOURNAL of August 21st, page 488, the details of the case which recently occurred at Crickhowell are known with sufficient fullness to members of the profession. As far as this case is con-

cerned, after the astonishing verdict of the jury, I do not see what more can be done. Every official I have spoken to says nothing can be done, and that it is useless reporting the matter to the Home Office. So I can only fall back upon the British Medical Association for instruction and help to try and prevent a similar occurrence in the future. Now, can and will the Association assist us? It has occurred to me that with its help we might have expert legal aid put at our disposal, ready to come at short notice, to be present at a similar inquiry, and help us to get the facts fully brought out. A medical man, situated as I was the other day, with only eight hours' notice, cannot for more reasons than one do this without legal expert aid to back him up. I simply throw this out as a suggestion and await the opinions of your readers. Perhaps some one can think of a better plan, but I feel very strongly that something should be attempted to strengthen the hands of those who may at any moment have to face such an inquiry alone and unaided, as I had. It ended with possible disastrous results in the future to the public whom we now vainly try to protect.—I am, etc.,

ALBERT E. JONES,
L.R.C.P.Lond., M.R.C.S.Eng.

Crickhowell, Breconshire, Aug. 30th.

THE CRESCENDO MURMUR OF MITRAL STENOSIS.

SIR,—In his communication to the BRITISH MEDICAL JOURNAL of August 28th Dr. E. Brockbank proves to his own satisfaction that the crescendo murmur in mitral stenosis is not really presystolic in time, caused by the flow of blood through the narrowed orifice from auricle to ventricle, but is, in his opinion, systolic, and due to regurgitation from ventricle to auricle. The arguments he adduces, amongst others, in favour of his contention are:—

1. That he can imitate the crescendo murmur and the terminal loud snap by blowing through a piece of drainage tube and obliterating its lumen while so doing.

From this experiment he infers that the rising-pitch character of the crescendo murmur in mitral stenosis must be acquired by "the act of the valve closing while a murmur is being produced at it." He then argues, without bringing forward any further evidence to prove it, that the crescendo murmur in mitral stenosis is due to escape of blood from the ventricle to the auricle through the thickened mitral valve, and that the terminal abrupt sound which follows is caused by "the sudden and forcible impact of the hardened, thickened jaws of the diseased valve." To quote verbatim his explanation of the crescendo murmur and first sound (p. 512):

> The mobile hinges become stiff and the murmur is formed by blood regurgitating under pressure through the valve while its stiffened jaws are being closed by the rising intraventricular pressure developed at an abnormally later stage of the ventricular systole. An accentuated first sound terminates abruptly this murmur, and is due to the *collision* of the thick, hard jaws which guard the stenosed orifice.

In my *post-mortem* experience as assistant pathologist for some years at St. Mary's Hospital I made a large number of autopsies on cases of mitral stenosis, but it has not been my privilege to see anything approaching "mobile hinges" to the mitral valve, to which Dr. Brockbank refers. In the vast majority of cases of advanced mitral stenosis a hard, fibrous ring and, in some instances, a rigid, calcified mass surrounds a button-hole or funnel-shaped orifice, and it is inconceivable that any force could cause the edges of this ring to "collide" during life, or, indeed, approximate in any appreciable degree.

On these grounds alone, apart from the fact that the first sound is mainly muscular in origin and not due to "collision" of the valves, Dr. Brockbank's explanation of the loud first sound in mitral stenosis is untenable, and, a fortiori, his contention that the "murmur is formed by blood regurgitating under pressure through the valve while its stiffened jaws are being closed."

2. To support his contention that the crescendo murmur is systolic in time, he figures two cardiograms by distinguished authors, which he would have us misinterpret to make the ventricular systole commence at the point indicated on the cardiograms as marking the commencement of the auricular systole. He has already stated that the stenosed valve is closed at a later period than normal; he thus claims that the ventricular systole is lengthened at both ends at the expense of diastole. In other words, he assumes that the ventricle can be filled in a shorter time than normal, through an orifice abnormally small (sometimes not exceeding $\frac{1}{3}$ in. in diameter), and, further, that the systole is lengthened in spite of the fact that the ventricle has less work to do, being imperfectly filled with blood.

The cardiograms he figures, however, if we interpret them correctly, afford striking proofs of the generally accepted explanation that the crescendo murmur is presystolic in time, and that, as we should expect, the ventricle takes a longer time than normal to fill through the narrowed mitral orifice.

3. Dr. Brockbank asks why a crescendo murmur is never heard in aortic stenosis if that heard in mitral stenosis is caused by blood being forced through the narrowed valve by auricular contraction. The answer to this would seem to be obvious. The conditions are totally different.

In mitral stenosis, as the ventricle expands in diastole a negative pressure is produced in its cavity; blood is sucked in through the narrowed mitral orifice, and a presystolic murmur is generated which is reinforced later by the increased velocity of flow caused by the auricular systole.

In the case of the aortic valve, when systole commences the aorta is full of blood under high pressure, and the aortic valves do not lift till the pressure in the ventricle exceeds that in the aorta. The blood is then projected into a tube already full of fluid under pressure, and not sucked into an empty cavity as in mitral stenosis. The gathering force of systole, moreover, is essential to maintain the rate of flow through the aortic valves, as the pressure in the aorta rises with the increased volume of blood. If, therefore, the murmurs in the two instances did resemble each other, it would be surprising and difficult to explain.

Dr. Brockbank's somewhat disparaging remarks about what he terms "the jugular pulse argument" will carry little weight with those who have read and appreciate Dr. James Mackenzie's epoch-making work on this subject, and as Dr. Lewis is directly attacked I leave it to him to reply to them.

I did not intend to enter into this controversy, as I hoped that others would take the matter up; but I could not allow Dr. Brockbank's statements to pass unchallenged, and if I have spoken rather strongly I trust Dr. Brockbank will forgive me and not take it in any sense as a personal question.—I am, etc.,

London, W., Sept. 13th. JOHN F. H. BROADBENT.

REPORTS OF THE POOR LAW COMMISSIONERS.

SIR,—Will you kindly allow me a short space to make my position clear, for Dr. Major Greenwood seems to have misunderstood it? I had no intention of laying claim to a general knowledge of "the value attached by Poor Law medical officers to their appointments," but mentioned specific cases of certain rural districts where the work was undoubtedly unremunerative. Surely Dr. Greenwood is not satisfied with the ridiculous payments for medical attendance and medicines in some of these districts, and my mentioning them does not warrant such a rebuke as he administers.

My contentions are:

1. That the Minority scheme contains no proposal that would necessarily displace or lower the remuneration of a single Poor Law medical officer, or, for that matter, any practitioner now employed by a public authority.

2. That the proposals of the Minority, if adopted, would do much to mitigate the present enormous amount of hospital abuse (vide Dr. King).

3. That the Majority proposals would undoubtedly deprive district medical officers of their livelihood in many districts.—I am, etc.,

London, W., Sept. 13th. H. BECKETT-OVERY.

ASYLUMS OFFICERS' SUPERANNUATION.

SIR,—One important point is not set out in your report of the deputation to the Lord Chancellor. It was shown that the Medico-Psychological Association, on whose

behalf I spoke, gave its support to the Superannuation Bill in obedience to one of the principal motives that led to its foundation—improving the care and treatment of the insane. Having this motive in view, it has established a highly satisfactory three-year system of training for attendants and nurses, which is bearing excellent fruit. The work of teaching is undertaken by the medical superintendents and their assistant officers gratuitously, and in addition to their own already heavy duties. The association has taken immense pains to get the best results, and has provided an elaborate plan of examination, certification, and registration. Now, all this has been, and is being, carried out solely for the benefit of the insane, to make their lot happier by increased efficiency in those who have personal care of them. Having of its own free will done so much to this good end, the association looks with confidence for assistance on the part of others. The offer to prudent seekers for employment of all proper inducements cannot fail to be of advantage; the neglect to make the offer is assuredly prejudicial and injurious.—I am, etc.,

September 13th. H. HAYES NEWINGTON.

RADIOGRAPHERS AND TREATMENT.

SIR,—The questions raised by your correspondents under the above title, in these days of overcrowding of the profession, if duly considered and responded to, will doubtless tend to relieve the critical condition of those medical men who have, at great additional expense, striven to solve the therapeutic action of radio-active agents, actinic, and *x* rays on morbid tissue changes. Unfortunately the personal disasters which have overtaken those who were reckless in the *radiographic* application of these agents on the one hand, and the premature conclusions drawn by certain pathologists on the other that the histopathological changes thus induced are in every physical and biological detail those of carcinoma, have done an extent of harm to the beneficial resort to these valuable agents that it would be difficult to estimate. It is, therefore, necessary to show, not only that neither of these dangers exists at the present day in experienced medical hands, but that they do exist in those of hospital subordinates, however competent, who practise radiography. Moreover, the radiographic and the radiotherapeutic departments in some of our metropolitan hospitals are distinct, as the art and the science respectively are only remotely related, indeed, as is section cutting and mounting, from vaccine-therapy in the pathological departments.

Why should there not be some legitimate way of acquainting general practitioners in a district, as well as all and sundry, that he confined himself to radiotherapy by an affix—for example, Dr. Brown, Radiotherapist, or words to that effect, on his plate—thus showing that he was not competing in general practice with his neighbour?

The legend "Physician and Surgeon" is well known, and that of "Ophthalmic Surgeon" is not uncommon; they convey their meaning.—I am, etc.,

September 5th. VACUUM.

ORIENTAL SORE.

SIR,—With reference to the remarks on "Oriental Sore in Northern India" by Captain R. Markham Carter on pp. 647–650 of the JOURNAL of September 11th, I would desire to point out that at the meeting of the British Medical Association at Leicester in 1905, I passed round at the Tropical Section of that meeting two photomicrographs I had taken, and which are depicted in p. 264 of the *Journal of Tropical Medicine* for September 1st, 1905, under Figs. 6 and 7, showing that the sandfly (Simulidium) was the cause. In the latter figure crowds of *Cercomonas* are shown, of which one is distinctly figured in the body of the sandfly. On that occasion when I passed round my photomicrographs Dr. Radcliffe Crocker was present. I also gave Dr. Daniel Elie Anderson, Paris, a set of my photomicrographs which I had with me.

I have searched various works on tropical diseases for a description of Oriental sore and its origin, and in no work is the sandfly mentioned previous to my mention of its being the cause of the Oriental sore, nor have I seen any clear description of the parasite nor its photomicrograph given.

Regarding synonyms used for the Oriental sore, known also as Delhi, Punjab, or Sind sore, I notice no mention made of the term "Aurangzebe" used in the North-Western Provinces and Oudh, where I had my experience as civil surgeon.

In the above contribution in the *Journal of Tropical Medicine*, I have given the treatment of Oriental or tropical ulcer which I found so useful. There are several native remedies I know of which are also successful.

I would ask the favour of these points being published in order to catch the eye of Captain Markham Carter, Officiating Director of the Pasteur Institute, India.—I am, etc.,

Cliftonville, Sept. 12th. G. H. FINK, Major, I.M.S.

A PLEA FOR A RATIONAL PUERPERIUM.

SIR,—Dr. Haultain's suggestion[1] that the rule of keeping the puerperal patient in bed for several days after her confinement is a lingering relic of the taboo practice of secluding the woman until a rite of purification has been performed is very interesting.

Rest in the recumbent position, spare dieting, and seclusion characterize the treatment of women both during menstruation and the puerperium all over the uncivilized world, for the reason that during these times a woman is looked upon as a dangerous person. This we have all heard about. But what is not so well known, perhaps, is that there are several exceptions to the rule. And the exceptions will, I am sure, prove interesting to your readers, because they seem to forestall von Alvensleben's effort to reform the present practice.

Among some races the patient is expected to get up and walk about after the child is born; among others she is made to occupy a sitting position. This is done, we are told,[2] not out of ignorance or carelessness, but deliberately, in order to facilitate the lochial discharge. The following races, among others, practise or have practised this treatment: The Germans (of the twelfth century), the Chinese, Japanese, Abyssinians, and certain American-Indian tribes.

It seems to be the case, and the delay of this reformation (if it be a reformation) until the present time exemplifies it, that midwifery is the most conservative as well as the most ancient branch of medicine.—I am, etc.,

London, W., Sept 7th. DAN M'KENZIE.

INTESTINAL PUTREFACTION AND THE PULSE IN RHEUMATOID ARTHRITIS.

SIR,—In the BRITISH MEDICAL JOURNAL of August 28th there appears an account of a demonstration by Professor Dixon and Dr. Dale of the action of the pressor substances of putrid meat on the heart. They showed that such products caused acceleration in the excised heart of a rabbit, and stated that, under certain circumstances, similar substances were very probably formed in the human gut during life.

This statement appears to me to be not without interest to such of us as believe in the autotoxic origin of rheumatoid arthritis. The theory of toxic absorption has long been admitted to account for many of the symptoms of this disease, but, so far as I know, the quickened pulse, which is so common a feature, has not hitherto been put down to the same cause. Various views have been advanced, such as diminished vagus inhibition, thyroid over-action. All writers, however, seem agreed that a persistent high pulse-rate (90 to 120), *without pyrexia*, is of grave import; indicating, even in the absence of all other symptoms, the continued activity of the disease.

For my own part, I have noted that such persistence is generally associated with the presence of *indican* in large quantities in the urine. That is to say, the tachycardia is coincident with putrefactive absorption from the intestines. Now, assuming that pressor substances are indeed formed in a stagnant gut, we are at once provided with an obvious explanation of the "rheumatoid" pulse in all cases in which such an unhealthy bowel-state admits of demonstration.—I am, etc.,

FRANCIS HERNAMAN-JOHNSON, M.B., Ch.B.Aberd., R.N.(ret.)

Bishop Auckland, Aug. 30th.

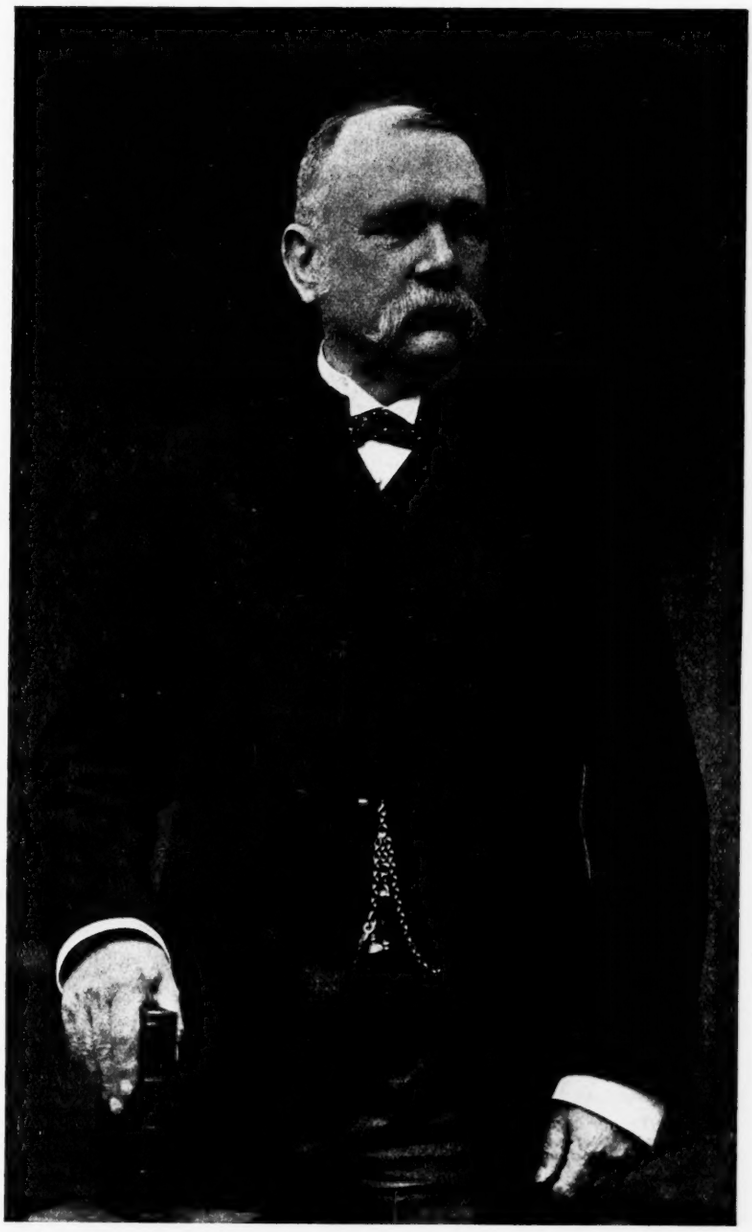
[1] BRITISH MEDICAL JOURNAL, August 7th, 1909, p. 310.
[2] Ploss and Bartels, *Das Weib*, Leipzig, 1902, vol. ii, p. 375.

Obituary.

THOMAS BRIDGWATER, M.B.LOND, LL.D., J.P.,

SOMETIME PRESIDENT OF COUNCIL OF THE BRITISH MEDICAL ASSOCIATION.

THE announcement of the death of Dr. Thomas Bridgwater made in the JOURNAL of last week has been received with the most heartfelt regret by all who had the privilege of a personal acquaintance with him. Although he had lived considerably beyond the ordinary span of human life, his death, nevertheless, must have come as a shock to his friends. Some ten years ago he retired from active professional life, but he continued to the end to take an interest in the advance of science and in the affairs of the British Medical Association, with the direction of which he had for many years been largely concerned.



Photograph by] THOMAS BRIDGWATER. *[Collier, Birmingham.*

Thomas Bridgwater was born in 1824. He came of an old Brecknockshire family, and was the third son of William Bridgwater, of Broomfield, Glasbury, in that county. He received his early education at a private school at Fulham; later he was apprenticed to Mr. Lewis, a surgeon at Leominster. In due course he entered King's College, London, where he had a distinguished career as a student, winning a scholarship and other distinctions. He held the offices of House-Surgeon and House-Physician, and was elected an Associate of the College. In 1847 he was admitted a Member of the College of Surgeons and a Licentiate of the Society of Apothecaries of London. He then spent two years as surgeon to the ironworks of Mr. Crawshay-Bailey at Nant-y-Glo, in Monmouthshire. He took the M.B. degree of the London University in 1852. In 1854 he entered into partnership with Mr. Thomas Hewlett at Harrow, where the remainder of his professional life was spent. For thirty-five years he held the office of medical officer to the famous school on the Hill, greatly to the advantage of the Harrovians of that period and of their successors, for he was one of the pioneers of school sanitation. The sanatorium was built under his supervision. He retired from active practice in 1889.

His activities were not confined to his profession. He took an active part in various fields of public work. In general politics he was a Conservative. He was Chairman of the Guardians and of the Highway and Sanitary Authorities of the Hendon Union. From this position he retired when county councils were instituted. He was a member of the Harrow Local Board, and a Justice of the Peace for Middlesex and for Westminster. In 1888 the University of Glasgow conferred upon him the honorary degree of Doctor of Laws. When the Volunteer movement was started in 1859, so staunch a patriot could not hold back. He enrolled himself a member of the force, and for some years he commanded the late 9th Middlesex Rifle Volunteers. He retired in 1889.

For many years Dr. Bridgwater took a prominent part in the work of the British Medical Association. He was Vice-President of the Section of Ethics in 1895, and was elected President of Council, in succession to Sir Walter Foster, at the Annual Meeting held in Dublin in 1887. On the expiry of his term of office in 1890, the following resolution was passed at the Birmingham meeting: "That the best thanks of the Council be given to Dr. Bridgwater for the able manner in which he has performed the duties of President for the past three years."

Dr. Bridgwater was a man of moderate counsels, and alike in business affairs and in matters of policy his judgement was thoroughly sound. In the Council and in the many committees on which he served his opinion always carried great weight. Personally popular, his influence always made for peace. To such men as he the Association owes its stability and successful working to a degree that can only be fully appreciated by those who had the opportunity of seeing the effect of his singleness of purpose and his disinterested devotion to the furtherance of the objects of the Association.

In the man there was no trace of self seeking. His unobtrusiveness might easily have made persons thrown into casual contact with him fail to recognize the strength of character that lay beneath his gentle manner. He was invariably courteous and conciliatory, but no one could know him at all intimately without recognizing in him the force of sheer honesty and uprightnesss, combined with steadiness and clearness of mental vision. He was, in the true sense of that much-abused word, a gentleman,

constitutionally incapable of a dishonourable action or a mean thought. Although he has passed away in the fullness of years, he has left the profession the poorer for his loss, for he was a general practitioner of the best type.

He was a keen all-round sportsman. In his younger days he acted as whipper-in to his brother's pack of harriers in Wales. He continued to shoot till he was 83 years of age.

After his retirement, Dr. Bridgwater lived at Hoote Hall, Uckfield, Sussex, and it was there he died. He was twice married—first in 1857 to Isabella Frances, daughter of the late Mr. Rowland of Nant-y-Glo. That lady died in 1874. In 1878 he married Eliza Blanche, youngest daughter of the late Mr. E. Mozley of Liverpool. By her he had a son and a daughter, who, with their mother, mourn the loss of a fond husband, a loving father, and a good man, who won deserved respect in every relation of life.

Sir CONSTANTINE HOLMAN writes: During the three years I was Treasurer of the Association I had the great advantage of being associated with Dr. Bridgwater when he was President of the Council. A pleasanter colleague it would be impossible to work with, whilst his devotion to the best interests of the Association was untiring. His long connexion with the affairs of the county as a magistrate gave him a great and quick grasp over the business of the Association coming before him. He was a man of sound judgement, and, when differing, his opinions were expressed in most courteous terms. For some years he was associated with Professor Saundby and myself in the very responsible duties of the Reference Committee, the appointment of which was made necessary by the failing health of the Editor of that time. Our association brought us into very close contact, to my great advantage and pleasure. In Dr. Bridgwater I have lost a most valued friend.

Mr. N. C. MACNAMARA writes: In answer to your request I may state that I have known the late Dr. Thomas Bridgwater since the year 1851, when, after a brilliant career at King's College and the University of London, he filled the post of House-Physician at King's College Hospital. For some twenty years I lost sight of him, but on my return from India in 1874 I found my friend full of vigour and the same bright, genial companion as in former times. We worked together for some years on the Council of the British Medical Association, and held office, he as President of the Council and I as Treasurer. Bridgwater's aim, as he often stated, was, if possible, to draw the medical practitioners of the country into concerted action; for he believed as a united body they would be able in the course of time to force the public and the Government to take a rational view of the importance of preventive medicine, in all its branches, on the well-being of the people. This was the aim he had in view and on which he spent no small amount of time and energy. In all his thoughts, words, and deeds Bridgwater exercised an unconscious regard for the feelings and wishes of those he was brought in contact with; his thorough sound common sense, cheery nature, and knowledge of his profession gained him the confidence and esteem of his patients and many friends, who will cherish his memory as long as they live.

Professor SAUNDBY writes: I have heard with great regret of the death of my old friend, Dr. Bridgwater, with whom I was intimately associated in the work of the Council from the time he was elected President of the Council until he lost his seat as Vice-President of the Association on the alteration of the By-laws. His unruffled temper, unfailing kindliness, and liberal hospitality made him universally popular with his colleagues, and I look back on the days when he and Sir Constantine Holman led the Council as to a sort of golden age, when there was universal peace and large surpluses were put by each year to the credit of the Association. Dr. Bridgwater was a typical practitioner of the older school which gave to the Association so many good friends, men who devoted unlimited time to its work without hope or desire of compensation or reward, except in the satisfaction they derived from the success of their labours. Few members of Council have given more of their time to its work. Twenty years ago, and for long after, I sat with him on innumerable committees, but perhaps the best illustration of his devotion is the zeal with which he attended for years the weekly meetings of the Reference Committee for supervising the JOURNAL.

He was very rarely absent, and, I think, regretted the abolition of the committee, although no doubt it had ceased to be necessary or even useful. Prosperous in his profession, an active Volunteer, and a keen sportsman, Dr. Bridgwater enjoyed life and knew the art of making the most of it. To be with him was like sitting in the sunshine. His fine temperament and good constitution enabled him to enjoy an unusual degree of health and strength long after he had passed beyond the allotted term of human life, but advancing age is an enemy to whom all must yield at last. I would not willingly let him pass away from among us without recording my testimony to his worth as a man and to the value of the work he did for the Association. Although it is now some years since we met, I cherish his memory with affectionate regard.

Dr. SLADE INNES BAKER of Abingdon, a practitioner of very long standing in that locality, and probably the senior member of the profession in the three neighbouring counties, died on August 30th. Dr. Baker, who was a descendant of an old Kentish family of that name, was born in Oxfordshire, his father being the rector of Heyford Warren, but he had been closely connected with Abingdon for considerably over sixty years. It was in Abingdon that he commenced his professional life as a pupil to the late Dr. Box, and it was to Abingdon that he returned as Dr. Box's successor, after obtaining the diplomas of M.R.C.S., L.S.A., as a student of St. Bartholomew's Hospital in 1853. During his career at Abingdon, Dr. Baker, in addition to carrying on a large practice, played a considerable part in local affairs. He served on its town council for some time, was a Governor of several of its charities, and had held a commission as a Justice of the Peace for the borough since 1889. He took, too, a keen interest in Freemasonry, in which he had held high office, and showed his affection for the English Church by acting as churchwarden and honorary parish clerk of St. Helen's parish for many years. On the professional side, he at one time held appointment as Surgeon to the Abingdon Gaol, and was still on the staff of Abingdon Cottage Hospital. In politics he was a Conservative, and in private life an honest and sincere friend, to whom no one in sickness or distress ever appealed in vain. At the time of his death he had retired from practice for some years, but still retained so much of his former marked physical strength and good health that, until within a few days of his death, his end was quite unexpected, even by those in constant contact with him. Nor were his many services to private individuals and the town forgotten, as was evident from the regret and practical sympathy expressed when the news of his death became known, and by the attendance at his funeral of a large and representative gathering. Dr. Baker, who was born in 1827, married, in the year 1865, a daughter of the late Dr. J. F. Martin of the Clock House, Abingdon, and is survived by his wife and four children.

Dr. HACKWORTH STUART, Medical Adviser to the Hanley Education Committee, and one of the pioneers in that work, died on September 6th as the result of an accidental injury to the head. He was only 33 years of age, and his death is an untimely close to a career full of promise. Educated at University College, London, and St. Mary's, Dr. Hackworth Stuart was a Doctor of Medicine of the University of London, a Fellow of the Royal College of Surgeons of Edinburgh, and a D.P.H. of Cambridge. After holding a number of hospital appointments in London, and acting as Assistant Demonstrator of Anatomy at University College, he went to Hanley as assistant to Mr. W. D. Spanton, and had practised there for two and a half years after buying part of Mr. Spanton's practice. In November, 1908, he entered into partnership with Dr. Wallis. His popularity was evidenced by a very large and representative gathering at the service and funeral. Universal sorrow is felt throughout the Potteries at Dr. Hackworth Stuart's untimely death.

THE estate of the late Dr. Henry Gorst, of Huyton, Liverpool, who died last June, has been sworn at a net value of £28,177. The will directed his executors to regard as paid all debts due to him at the time of his decease for professional services to persons whose net wages do not exceed 30s. a week.

Medico-Legal.

IMPRISONMENT FOR FALSE PRETENCE.

AT Wigan, on September 2nd, a man who professed to cure blindness and other diseases, and who gave his name as Noel Cody, was charged with having on two occasions obtained money by false pretences, and in respect of each charge was convicted and awarded three months' imprisonment, the two terms to run consecutively. It appeared from the evidence that the defendant gave entertainments on the stage as a pistol shot and thrower of the lasso, and sometimes, under the title of the "Mighty Medicine Man," treated cases on the stage and elsewhere. In dealing with the blind he licked their eyes, claiming that in this way he got rid of the skin which caused the blindness. He also sold bottles of a lotion which on analysis proved to be a solution of permanganate of potash of the strength of 1 part in 1750. Such a solution, said the borough analyst, could be neither injurious nor beneficial; the usual strength of solutions of permanganate of potash was 1 in 150. The prisoner brought forward two witnesses who said benefit had been received at his hands, one of them being the aunt of a child which had a lump on its back, and was unable to walk until it came under the prisoner's treatment. The prisoner in giving evidence stated that he had taken to the medicine business, of which he had obtained some knowledge from the Indians, because the competition in the pistol shooting and lassoing line was so severe.

CHRISTIAN SCIENCE TREATMENT.

AT an inquest at Worthing on September 13th on the body of a woman, aged 39, the jury attached to its verdict of death from natural causes a rider to the effect that the practice of Christian Science, especially in cases of serious disease, was harmful, and greatly to be deprecated, and that the taking of money in return for such treatment was unchristian. The deceased was a patient who had been suffering from phthisis for some five years, and had been following the treatment prescribed for her by a medical man in London until last Easter. On the advice of her sister she then consulted a local Christian Scientist, with whom arrangements were made for a course of Christian Science treatment, consisting of prayers twice daily. The payment made was 5s. a week, being a reduction from the guinea which, according to the Christian Scientist who gave evidence, is the regular fee for treatment.

ENGAGEMENT OF LOCUMTENENT BY TELEPHONE.

X. Y. Z. writes that he was engaged as a locumtenent by telephone for a fortnight, and on the engagement being repudiated sued for damages in the Sheriff's court at Glasgow. The case was referred to in the JOURNAL of July 31st. Although our correspondent proved his case he was unable to recover more than 2s. 6d. as damages. He wishes to know if he has any further remedy at law.

*** It is difficult to understand why our correspondent was awarded such trifling damages. The measure of damages, according to English law, is what the injured party lost by the non-fulfilment of the contract by the other. It may be that although breach of contract was proved our correspondent was unable to prove that he suffered injury thereby. In that case he would only be entitled to nominal damages. It is quite possible that the Sheriff's decision might be successfully appealed against, but such a procedure could not be recommended.

The Services.

THE INDIAN MEDICAL SERVICE.

MAJOR, I.M.S. (retired), writes: As there seems a tendency nowadays to cry down the Indian Medical Service, may I be permitted to write something on the other side of the question? As a retired officer who served seventeen years, it may be conceded that I know something of my subject.

First of all let me point out that the comparative table of pay of the Royal Army Medical Corps and the Indian Medical Service in the article in the BRITISH MEDICAL JOURNAL of August 28th, p. 577, is quite misleading to any would-be candidate for the Indian Medical Service. Grade pay for the Indian Medical Service only is shown. A glance at the table of pay in the Educational Number of the JOURNAL (p. 638) shows the present rates of pay—unemployed, grade, and staff pay. A novice reading this after having read the article just referred to would quite reasonably suppose that staff pay would not be a certainty, but a matter of good fortune, perhaps, or great ability corresponding to employment on the staff in the case of a combatant officer. This is what I want to make clear. Grade pay *alone* is practically *never* drawn. During an officer's early years in the service he is liable to be on what is termed "unemployed" pay. This means he has no definite appointment, or, maybe, has not passed his Hindustani examination. Once he has passed

this, however, and has a definite appointment, he draws grade pay *plus* staff pay.

Under existing regulations, after seven years' service grade pay alone is drawn if an officer be unemployed, but it would be altogether exceptional that an officer of seven years' or more service should have no definite appointment.

If in military employment he is pretty certain to have substantive charge of a native regiment and draws from Rs. 650 (£43 odd) to Rs. 700 (nearly £47) monthly, with Rs. 60 (£4) horse allowance if in charge of a cavalry regiment. In civil employ the rate of pay *proper* is somewhat lower, but allowances bring it up (that is, gaol, railway, civilians' families, etc.). It might be thought that it is a matter of good fortune to hold charge of a native regiment, but here I would point out that the Indian Medical Service officer is primarily intended for military duty with the native army, and as the service is generally undermanned, an officer often finds he has two regiments to look after, drawing pay for each. In the note criticized the writer complains that a senior medical officer of the Indian Medical Service might be in charge of a station hospital for native troops and draw no extra pay. True, for the pay is drawn for regimental charge, *not* hospital. It might happen that in time of stress two officers only would have to look after five regiments. The senior medical officer might have three under him, and he would draw pay for three—full pay for his permanent appointment and Rs. 100 per mensem for each of the others.

Now, in the table criticized a senior Indian Medical Service major is shown as drawing Rs. 750 against Rs. 825 odd in the R.A.M.C. What is the actual state of the case? As permanent medical officer of a native regiment he draws Rs. 900, with Rs. 90 horse allowance if with cavalry. After sixteen years' service I was in permanent charge of a native cavalry regiment, drawing regimental pay Rs. 900, horse allowance Rs. 90. I had charge also of the cantonment hospital, Rs. 189; and for a time charge of various details, Rs. 75; and acting civil surgeon, Rs. 100; so for about two months I drew over Rs. 1,400, my ordinary pay being over Rs. 1,200 (£80). The extra is made up by exchange compensation. In another station I had charge of two regiments besides my own, and was also staff surgeon, thus drawing Rs. 300 (£20) monthly in addition to my ordinary pay.

I quite admit civil employ is not what it used to be. But considering that a young man can live well and save after his first few years of service, and that the retiring pensions are so good, the Indian Medical Service is not a service lightly to be given up. Further, the rules for sick leave, half pay, etc., are decidedly liberal; ordinary leave rules, too, are liberal; but leave is rather difficult to get in military employ (that is, long leave to Europe).

Re unemployed pay, personally out of my first two years I spent fourteen months on unemployed pay, but eight months of this was on active service, when I drew field service horse allowance in addition, and expenses were so light that I was able to save half my pay, and in those days we only drew Rs. 317-8, against Rs. 420 at the present time. No doubt cost of living has greatly increased in India, but the pay has also been increased.

In conclusion, I would advise any young man who contemplates entering the Indian Medical Service not to be influenced by pessimistic letters, but to try to find retired officers or officers on leave who will advise him, and I think he will find that grumblers are exceptional and the large majority will admit that the Indian Medical Service affords a fine career for any young surgeon.

Another last point. The social position of a surgeon in charge of a crack native regiment is very different from anything he can hope for in civil life. Unless he attain to the position of a specialist or consultant, and then only after many laborious years, he will seldom have the assured position in society he has as a regimental "doctor," who, if he be a "good fellow," is generally the most popular man in the regiment, in spite of all that has been said to the contrary.

Public Health AND POOR LAW MEDICAL SERVICES.

SANATORIUM TREATMENT.

IN its tenth annual report the Society for the Prevention and Cure of Consumption in the County of Durham records the opening of a new sanatorium of 28 beds at Wolsingham for women patients only. This, together with the Stanhope Sanatorium, will bring up the total accommodation for both sexes to 73 beds. The age limit has been reduced to ten years. The society is anxious to see the foundation of an after-care association and outdoor colony, and is ready to found a home for advanced cases if the authorities will assist to some extent in its equipment and purchase, and will subsidize beds in it at the same rate as that at which they pay for beds in the sanatoriums. These are supported partly by contributions from bodies of working men at the rate of 3d. a quarter a man, partly by subsidies from local authorities, partly by payments for maintenance by patients who do not belong to subscribing bodies of workmen, and partly by ordinary subscriptions. Annexed to the report is a useful summary of the modern treatment of consumption in popular language. The cases admitted are classified after the method of Turban, in which Degree 1 represents disease of slight severity, affecting at most one lobe or two half lobes; Degree 2, either disease more extensive than Degree 1, but still of slight severity and affecting at most two lobes, or severe disease affecting at most one lobe; and Degree 3 all cases of greater extent and severity than Degree 2. In his report Dr. John Gray, Medical Superintendent of Stanhope, again draws attention to the fact that the proportion of advanced cases sent for treatment is still too large, and the figures which he supplies fully justify this statement, as also his view that the benefit likely to accrue from treatment of cases which have reached Degree 3 is of too short duration to justify their admission. The tables in which he summarizes the results of the eight years' work show that of the 267 first degree patients 50.9 per cent. are still at work and 17 per cent. dead; of the 208 second degree patients, 20.1 per cent. are still at work and 49.5 per cent. dead; and of the 317 third degree patients, 13.8 per cent. are at work and 65.2 per cent. dead. If the first year is examined separately, it is seen that of 12 patients admitted eight years ago in Stage 3 all are now dead, while of 14 admitted in Stage 1 exactly half are known to be still at work.

TREATMENT OF PHTHISICAL PAUPERS.

AT a conference of representatives of Surrey boards of guardians on September 13th it was resolved that, subject to any two or more of them being willing to combine for the purpose of providing an institution for the separate treatment of pauper cases of phthisis, and adopting a specific resolution to that effect, application should be made to the Local Government Board for authority to carry out the proposal. The guarded wording of the resolution is due to the fact that some of the smaller boards, which have comparatively few such cases to deal with, hesitated to give in their adherence to a joint scheme. The movement among Surrey guardians in favour of a joint institution to be reserved solely for cases of phthisis was initiated by the Croydon Board some months ago, that body having come to the conclusion that the presence of consumptive patients in its infirmary was a source of danger to the other occupants. An inquiry which followed showed that on March 25th eight of the Surrey unions had between them 251 cases of phthisis among their indoor paupers, in addition to 51 phthisical patients, to whom they were giving outdoor relief.

FEES FOR CERTIFICATION OF WORKHOUSE LUNATICS.

G. W., who is medical officer to a provincial workhouse, states that he has hitherto received only 10s. 6d. per case for certifying workhouse lunatics for asylum. He asks whether the guardians can fix the amount to be paid for this duty, and whether the magistrates are compelled to employ him to certify these cases; and, further, if the Local Government Board would have any voice in the matter if he declined to certify for less than a guinea? Our correspondent does not wish to hear that he must sign for 10s. 6d. or resign.

*** We regard the certification of pauper lunatics as being a very responsible professional duty, and think that it ought always to carry a fee of not less than one guinea; this amount is, we believe, very generally paid. The guardians, as a board, have no power whatever to fix the amount; this depends entirely on the acting magstrate, who has power (under Clause 285 of the Lunacy Act, 1890) to make an order on the guardians to pay reasonable remuneration to the medical practitioner who is called upon to certify these cases. We apprehend that the Local Government Board would not interfere in reference to fees so long as there was strict compliance with the Lunacy Act.

MEDICAL MEN AS MEMBERS OF COUNTY COUNCILS AND URBAN DISTRICT COUNCILS.

W. A. E. asks the following questions: (1) Whether medical men who are members of county councils can accept fees for giving certificates relating to school children when such fees are paid by the council of which they are themselves members? (2) Whether a chairman of an urban district council who holds appointments under the Poor Law and is also a public vaccinator can maintain that position?

*** (1) Members of county councils cannot earn fees which would be paid out of the funds of the council of which they themselves are members. (2) Any Poor Law medical officer or public vaccinator can sit as a member, or even as chairman, of an urban district council, as no urban council has any duties in reference to Poor Law matters, and consequently has no payments to make for any services rendered by Poor Law officers.

CANVASSING FOR APPOINTMENTS.

M. Y.—If canvassing for a public health appointment is forbidden, the prohibition should, of course, be enforced, and if the rules of the electing body are properly drawn would disqualify a candidate. Where canvassing is not forbidden the candidate is clearly entitled to make out the best case he can for himself, but we agree with our correspondent that it is unbecoming to do so by depreciating the claims of other candidates.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

Swansea.—Upon the estimated population of 107,620, the birth-rate in Swansea in 1908 was 30.6 per 1,000, the death-rate 17.0 per 1,000, and the infantile mortality-rate 151 per 1,000 births. The death-rate among young children was high taking the borough as a whole, and in certain districts was extremely high. In the Alexandra Ward, where there is a population of over 10,000 persons, it was as high as 195 per 1,000 births. No mention is made in the report of what steps are being taken to lessen this abnormal mortality. Draft by-laws for the regulation of the trade of a dealer in rags and bones were submitted by the Swansea Corporation to the Local Government Board for approval. Certain of the suggested by-laws were not approved by the Board, including one which required that all rags and bones should be cleansed and disinfected as soon as they were brought on the premises. In justification of the adoption of this by-law the medical officer of health, Dr. D. J. Morgan, points out that the work of tearing and sorting of rags is often carried on in an atmosphere laden with dust, and it is quite possible for the workers to contract phthisis, typhoid, or other fevers in the course of their employment. The Corporation suggested that the bones should be stored in metal receptacles, but the Board desired as an alternative that well-tarred bags might be permitted. In Dr. Morgan's opinion these bags would be practically useless, as they are never well tarred, would be rarely kept closed, are liable to rot, and are easily eaten through by rats. It is not stated whether the by-laws as amended by the Local Government Board are in force in the town. Bound up with the report is an interesting account of the outbreak of epidemic cerebro-spinal fever which occurred in Swansea in 1908 involving 63 cases, of which number 18 were treated in the borough fever hospital. The hospital treatment included repeated lumbar puncture, no serum or antiseptic of any kind being injected. The mortality was 44.4 per cent. of the cases treated, compared with 93 per cent. in the case of those nursed at home, and where lumbar puncture was resorted to in only 16 instances, and then merely for diagnostic purposes.

Essex.—The annual report for 1908 of Dr. Thresh contains the statistics of the administrative county and a summary of the statistics of the different urban and rural districts. The general figures are most satisfactory, and Dr. Thresh states "there is little doubt that Essex is one of the healthiest, if not the healthiest, county in England." The population of the administrative county for 1908 is estimated at 1,041,456, an increase of 34,657 in the urban and a decrease of 502 in the rural districts. The latter is due to inclusion of part of a rural district within an urban. The birth-rate—24.0 as compared with 26.5 for England and Wales—shows, as elsewhere, a marked decrease. The death-rate for urban districts was 10.25, for rural 12.95, and for the whole administrative county 10.9. This extraordinary death-rate is lower than that met with in any other county in England. Corrected for age and sex distribution, the death-rate for the administrative county is 10.65 and the urban and rural rates 10.6 and 11.15 respectively. The rate for England and Wales is 14.7. Of the large towns, the highest rates (corrected) were given by Barking (13.15) and Colchester (12.3), and the lowest by Ilford (9.6), but in all the larger districts the rate was low compared with the rest of England. The infantile mortality-rate for the county for 1908 was only 89 as compared with 121 for England and Wales. In the urban districts it was 93 and in the rural 76. The highest infantile mortality was recorded in some of the smaller urban districts, whilst the largest towns had, generally speaking, very low rates. In an interesting table Dr. Thresh shows that both under 5 years of age and from 25 to 65 years the mortality is greater in the towns, the final result being that in the towns only 28.2 per cent. reach the age of 65, whereas in the rural districts 44.3 per cent. reach this age. The number of deaths recorded from cancer was 812, giving a rate of 0.81. This is higher than for any previously recorded year. It was slightly higher in the urban than in the rural districts. The deaths from tuberculosis show a continuous diminution, being 0.76 in both urban and rural districts for phthisis and 0.34 and 0.39 respectively for deaths from other tuberculous diseases. Dr. Thresh remarks that "the low phthisis death-rate in a county with such a large population living upon land only a few feet above sea level is somewhat remarkable, but apparently efficient drainage and a good water supply will render a marsh salubrious." There is no public sanatorium in the county. Three cases of small-pox were notified during the year and 4,490 cases of scarlet fever. There were 4.6 cases of scarlet fever per 1,000 population in the urban and 3.3 per 1,000 in the rural districts. The case mortality was 2.4 in the latter districts and only 1.7 in the urban. The death-rate from diphtheria was 0.205, and the case mortality 12 per cent. About half the cases were removed to hospital. Only 198 cases of typhoid fever were notified in the urban districts and 66 in the rural districts. The death-rate from this disease, 0.04, was very low, less than one-third of what it used to be a few years ago. The death-rates from measles and whooping-cough were respectively 0.17 and 0.135, in both cases below the rates for England and Wales. In an interesting note comparing the cost and accommodation of a number of infectious hospitals in the county, very wide variations are shown. In one district each person costs £47, in another £102. Great variations in the size of the staff maintained compared with the number of beds were also noted. The second part of the report deals with sanitary administration in the individual districts, which consist of 32 urban and 18 rural districts. Summaries of the reports of the individual medical officers of health are given in an appendix.

Letters, Notes, and Answers.

COMMUNICATIONS respecting Editorial matters should be addressed to the Editor, 429, Strand, London, W.C.; those concerning business matters, advertisements, non-delivery of the JOURNAL, etc., should be addressed to the Office, 429, Strand, London, W.C.

AUTHORS desiring reprints of their articles published in the BRITISH MEDICAL JOURNAL are requested to communicate with the Office, 429, Strand, W.C., on receipt of proof.

CORRESPONDENTS who wish notice to be taken of their communications should authenticate them with their names—of course not necessarily for publication.

CORRESPONDENTS not answered are requested to look at the Notices to Correspondents of the following week.

MANUSCRIPTS FORWARDED TO THE OFFICE OF THIS JOURNAL CANNOT UNDER ANY CIRCUMSTANCES BE RETURNED.

In order to avoid delay, it is particularly requested that ALL letters on the editorial business of the JOURNAL be addressed to the Editor at the Office of the JOURNAL, and not at his private house.

TELEGRAPHIC ADDRESS.—The telegraphic address of the EDITOR of the BRITISH MEDICAL JOURNAL is *Aitiology, London.* The telegraphic address of the BRITISH MEDICAL JOURNAL is *Articulate, London.*

TELEPHONE (National):—
2631, Gerrard, EDITOR, BRITISH MEDICAL JOURNAL.
2630, Gerrard, BRITISH MEDICAL ASSOCIATION.
2634, Gerrard, MEDICAL SECRETARY.

☞ *Queries, answers, and communications relating to subjects to which special departments of the* BRITISH MEDICAL JOURNAL *are devoted will be found under their respective headings.*

QUERIES.

TRUST NATURE writes: Can you tell me upon what grounds the idea of avoiding part breast and part artificial feeding of infants rests? Is the gradual transition not the natural one in the case of the dogs and cats of our houses and the sheep and horses of our fields? Does the human mother's milk often in Nature suddenly stop? I myself have never known a case, whilst I have known scores of successful gradual changing. If any one refers to the milk from one cow being better than the mixed milk of the herd, I have only known of one case where it was supposed to have been of benefit, and this turned out to be a farce, as the farmer's girl confessed afterwards to merely putting some of the common stock in a separate can; but the strange thing was that the child got better, although the doctor said the one-cow milk was the only resource.

PARAFFIN AND HYPERSECRETION OF THE THYROID.

LOS ANGELES asks to be referred to any authority or result of any attempt that has been made to reduce the hypersecretion of the thyroid by the injection of paraffin or other inert substance.

HOME FOR CRIPPLED IMBECILE CHILD.

H. A. A. asks for a home or hospital in which a crippled imbecile, the child of very poor parents, could be received.

*** There is no charitable home or hospital available, but at the Hants County Asylum, Fareham, there is a ward for idiot children to which admission might be obtained through the Poor Law authorities.

"RUSSIAN FOOD."

A CORRESPONDENT writes to ask what "Russian Food" is.

*** We have made inquiries on the subject in various quarters, but have not succeeded in obtaining the information required. It is just possible that by "Russian Food" the national dish "shtshi," a kind of sauerkraut, is meant. The following is an extract from an official report on the food products of St. Petersburg, abstracted in the *Pharmaceutical Journal* (April 1st, 1871, pp. 788-9), in which this substance is described. Other Russian foods are mentioned in the abstract referred to:

> The great vegetable staple of the country is the cabbage, which grows in great perfection, fine, large, solid, white, and crisp. It supplies a chief portion of the subsistence of the people all the year round. At the beginning of winter every family lays in a store. At that time the plants are cut down, and chopped up or shred into thin slices, these being packed in barrels with vinegar and salt, a kind of fermentation takes place, the cabbage becoming a kind of sour crout. This is made with meat into a cabbage broth called "shtshi" which is the most characteristic national dish in Russia, and forms the daily food of the mass of the people.

ANSWERS.

H. H. writes, in reply to "Deafness" (BRITISH MEDICAL JOURNAL, August 28th), that the Royal School for the Deaf and Dumb, Old Trafford, Manchester, admits children at that age. The head master, he believes, likes to get the children at as early an age as possible, and takes them from 3 or 4 years old and upwards.

DISTRICT NURSING.—According to the rules of the Queen Victoria's Jubilee Institute for Nurses, a Queen's Nurse must have had: (*a*) Three years' training in ordinary nursing

(inclusive of at least two years in a general hospital or infirmary); (*b*) six months' training in district nursing (including maternity nursing); and, if to be employed in midwifery, (*c*) the training required by the Central Midwives Board. The mininum salary is £30 a year, or £32 if required to do midwifery, rising to £32 and £35 the second and third years, with an annual allowance of £4 for uniform. In addition to the salary and uniform, which are independent of local conditions, board, laundry, furnished rooms, fire, light, and attendance, or equivalent allowances have to be provided. In some districts she is provided with a bicycle or other means of getting about her work. The total expense varies in different districts from £85 to £100 a year. A "village" nurse is usually a person drawn from the peasant classes; she must be a certified midwife, and in addition must have had either not less than nine months' combined district and midwifery training, or "approved" hospital training, followed by not less than three months' "approved" district training. The pay of a village nurse commonly begins at 14s. a week, rising to 16s., 18s., or £1 a week during the term of agreement, and covers board, lodging, and laundry. Her cost to the district employing her is put down by the institute as between £45 and £60. The institute only allows its own village nurses to be employed in rural districts where lack of funds makes it quite impossible to support a Queen's Nurse, and when there is a county association whose rules have been approved by the institute and which undertakes to supervise her work, or as an assistant to a Queen's nurse when special circumstances seem to render such aid desirable.

CONGENITAL DISLOCATION OF HIP.

"R." will find information respecting congenital dislocation of the hip in the *Medical Annual*, 1909, pp. 374-5.

THE DANGER OF FLIES.

DR. PULLIN (Sidmouth) writes to suggest that Dr. H. Rainsford (Woodley, Reading) should try No. 5 Calvert's carbolic, 1 to 40 parts water, to be used cold.

DR. DOUGLAS MACDONOGH, D.P.H. (London), writes: I should recommend Dr. Rainsford to try formalin, either in liquid or tablet form, used with a spirit lamp, shutting doors and windows. This, together with spraying of walls, curtains, lamp shades, etc., with formalin, full strength, appears to me to be the most effective method. I have tried various other remedies, but they only seemed to amuse the flies.

COUCH FOR CONSULTING ROOM.

MR. M. G. MCELLIGOTT, F.R.C.S.I., D.P.H. (Wigan), writes, in reply to "T.'s" query: I should like to state that I introduced to the profession an inexpensive chair of the type which he requires, and which I described in an illustrated article in the *Lancet* some time in 1895 or 1896. The chair, which I did not patent, was made for me by Mr. Herbert White, Belper, who applied for a patent, as well as I remember, but who did not in the end protect the invention.

TUBERCULOUS SINUS.

DR. T. WALKER LOVE (Airdrie) writes: I had a case some years ago where several tuberculous sinuses extended in various directions around the ankle-joint. These had been in existence for months, and no form of treatment could get them healed. At last I kept the patient absolutely at rest and injected, by means of an anal syringe, iodized phenol (iodine resub. 320 gr., liq. phenoli pur. ad 8 oz.). The sinuses healed in the course of two weeks, although they had existed for many months in this case. I had to use an anal syringe as the sinuses extended on an average of about 2 in. in among the tendon sheaths, and at the same time they were very narrow. Some force was, therefore, required to get the solution well into each sinus; hence my use of such a syringe. There certainly was a good deal of reaction for a few days, but this ultimately subsided. I then applied some pads over the course of the sinuses and bound them firmly down so as to bring the walls of the sinus together. Before injecting this fluid, one should be careful to protect the surrounding healthy skin well, as any excess of material which is used generally flows out of the sinus after being injected. It has a very caustic action.

LETTERS, NOTES, ETC.

PRACTICE IN THE TURKISH EMPIRE.

WE are informed by Dr. E. W. G. Masterman that the viva voce examination which foreign practitioners desirous of obtaining permission to practise within the Turkish Empire have to undergo is now conducted either in French or in Turkish, the use of an interpreter being no longer permitted.

LIBRARIES IN LONDON.

M.R.C.S., L.R.C.P. complains that the libraries both of the Royal College of Surgeons and of the Royal College of Physicians in London should be closed at the same time—this year for the month of September.

*** This is a matter upon which representations might be made to the presidents of the colleges respectively, but we may point out that the library of the British Medical Association, now rearranged in the fine room provided in the new building, is open for the use of members, and that there is also a conversation room on the third floor of the building.

POSSIBLE THIRD DENTITION.

MR. ALBERT SHEPPERD, L.S.A.Lond., etc. (Brixton, S.W.), writes: I have a patient aged 55 years who is just cutting her third set of teeth. Four incisor teeth can be very plainly felt in the upper jaw, and the left central incisor has just come through. The gum is tender, and its whole appearance reminds one forcibly of the mouth of a child of about 11 months. They were first noticed by the patient a few months ago, and she has had slight bronchitic symptoms since. I am informed that the patient lost most of her teeth after a shock ten years ago. They became loose, and she suffered pain with them, and was eventually able to pull them out with her finger and thumb. The patient is a fairly well-nourished woman of the working class, and enjoys good health as a rule. The lower jaw has retracted normally, and contains only three very carious teeth of the second dentition.

*** Any record of a third dentition which was fully authenticated would be of the greatest interest, both from the biological and the practical standpoints. But there are many fallacies which require to be excluded before any case can be established. It is essential to be sure that all the teeth of the second dentition were erupted in due course, and that the case is not one merely of delayed eruption of teeth of that series, a not uncommon occurrence. It is essential also to see that neither the teeth of the second dentition nor those attributed to a third dentition present any of the peculiarities of supernumerary teeth. Some embryologists believe that they have seen traces of the budding off of the tooth band in a position indicative of rudiments of a third set, but no instance of their development into complete teeth has been placed beyond doubt.

ABORTIVE TREATMENT OF ENTERIC FEVER.

DR. R. A. COLLECTOR (Medical Officer, Rajkot State, Kathiawar, India) writes: I have recently been experimenting with a very simple method of treating cases of typhoid fever, but since this disease is one of comparative rarity in Kathiawar, where I am stationed, I have not had sufficient opportunity of trying it on a large scale. Nevertheless, the results which I have obtained seem sufficiently good to invite medical men at work elsewhere to give the treatment a trial, more especially as the remedy used is of the simplest character, and everywhere available. I had hoped that during my leave in England an opportunity might have occurred of securing for the remedy an extended trial, but this not proving possible, I now write to state my facts. These are that in 7 cases of typhoid fever the disease has appeared to abort on the administration of the juice of from two to four limes, of the small Indian variety, a day. In these cases the stage of the fever when I commenced treatment varied from the end of the first to the end of the second week. In six of them typical typhoid spots were present, and in two diarrhoea, which in India is not an invariable accompaniment of enteric fever, was present. Three of the cases were submitted to the Widal test, and gave a positive reaction. One case was one of two which occurred in the same house consecutively, the first lasting the normal period, the second aborting in four days after the commencement of the treatment, on the seventh day of illness. This was a very typical case of enteric fever. In some of these cases the temperature on the second day of treatment rose a little higher than it had been, and in nearly all cases diaphoresis was more marked than is common in the ordinary run of enteric cases. I am quite aware that these cases are not sufficient foundation for a final conclusion, but, nevertheless, they suggest that the treatment would be worth a trial. In England, where perhaps the small Indian lime is not available, it would probably suffice to give the juice of two fair-sized lemons. Apart from the comparative rarity of enteric fever in Kathiawar, the natives of the country are indisposed to take lime juice when suffering from fever, on the ground that it is "cooling," and according to native conceptions "cooling" remedies are inappropriate to fevers.

PARTIAL THYROIDECTOMY.

DR. T. P. DUNHILL, of Melbourne, writes to correct an error in his paper on partial thyroidectomy published in the last volume of the JOURNAL, p. 1222. In the sentence, "I know of 54 deaths which have taken place during the last year in cases (of exophthalmic goitre) operated on under general anaesthesia," the number of deaths should have been given as 5.

SCALE OF CHARGES FOR ADVERTISEMENTS IN THE BRITISH MEDICAL JOURNAL.

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NOTE.—It is against the rules of the Post Office to receive *Poste Restante* letters addressed either in initials or numbers.